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Behaviors Related to HIV Infections in Rural Versus Urban Regions of Nigeria

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Abstract

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Michael Okeke

MS, Trident University, 2004

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Efforts by the Federal Republic of Nigeria and international nongovernmental agencies to reduce the impact of HIV in Nigeria have not yielded the anticipated results. This study focused on the association between attitude, religious beliefs, knowledge of HIV, sexual risk behavior, and HIV epidemiology in rural and urban Nigeria. This quantitative study used social-cognitive theory and problem theory. The study was based on the Nigerian Demographic and Health Survey (NDHS) 2013 data including a sample of 33,006 participants. Specific covariates including gender, sexual partners over the past years, age at first sexual encounter, socioeconomic status, and literacy level were obtained from the sample. Two hypotheses from each research question were tested to guide the study methodology. Linear regression results suggested that knowledge, attitude, location, and religion predicted sexual risk behavior. Muslims showed the least sexual risk behaviors compared to other religions while more positive attitudes and more knowledge increased sexual risk behaviours. Location had no significant impact on sexual risk behavior. Spearman correlation results depicted a relationship between knowledge and sexual risk behaviors of urban and rural Nigerians separately. More knowledge depicted an increase in sexual risk behaviors. The study results may be useful to Ministry of Health and program planners in constructing culturally based HIV interventions. The significant relationship between knowledge, attitude towards sex, and religious practices may be incorporated with theoretical knowledge on social-cognitive variables to enhance further understanding of the way in which individuals may engage in preventive behaviors to reduce HIV and its effects in Nigeria. Reductions in the spread of HIV/AIDS would lead to a healthy and more productive society.

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Chapter 1: Introduction to the Study

Introduction

In the last 5 years, over 25 million individuals have lived with HIV/AIDS worldwide; fully 75% of these people live in sub-Saharan Africa (CIA World Factbook, 2012). In Nigeria, in particular, human immunodeficiency virus (HIV) infection incidents and high-risk behavior prevalence continue to rise in the population. This study examined the existing relationships between various variables, including attitudes, religious beliefs, HIV knowledge, and risky sexual behaviors within urban and rural regions in Nigeria. This was done under the guidance of social cognitive and behavioral theories with the use of secondary data from the 2013 Demographic and Health Survey (DHS, 2013) to obtain information about key indicators regarding the Nigerian population and health. Such indicators include sexual activities, knowledge about acquired immune deficiency syndrome (AIDS) and other sexually transmitted diseases (STDs), as well as associated risk behaviors.

The purpose of this study was to test the relationship between knowledge of HIV, attitudes, religious beliefs, and sexual risk behaviors, as well as their combined effect on HIV infections in urban and rural regions of Nigeria. There is a need for researchers to determine why the available prevention techniques have failed in combating and/or controlling HIV infections in urban and rural regions in Nigeria (Shesgreen, 2010). The study waswas conducted to provide meaningful results that could aid the Ministry of Health in the fight against increasing HIV infections in Nigeria. This study may lead to positive social change by providing public health workers with information on how HIV knowledge, attitudes, and religious beliefs influence sexual risk behaviors among the

Nigerian population. It could also be helpful to those seeking to understand the association between demographic or social risk factors and HIV rates, thus providing information to public health agencies, health care planners, and other stakeholders to apply in the implementation of programs targeting behavioral changes to reduce HIV instances in Nigeria (NDHS, 2013). In this way, the study has the potential to promote positive social change for individuals, families, and communities in Nigeria as these groups find ways of dealing with HIV and its adverse effects, mainly through behavioral change in relation to risky sexual behavior.

This chapter is broken down into various sections. The background section provides a brief description of the research literature related to the scope of the study topic and a description of the gap in knowledge that the study addressed. The problem statement section provides a description of the study problem and evidence of consensus that the problem is current, relevant, and significant to the study topic. This section also addresses a meaningful gap in the current research literature. The major theoretical propositions or major hypotheses are stated with reference to more detailed explanations in the subsequent chapters. Another section in this chapter on the nature of the study summarizes the methodology with regard to how data were collected andwas analyzed. The other sections include definitions, assumptions, scope and delimitations, limitations, and the significance of the study.

Background

HIV infection is one of the most significant public health challenges in the Federal Republic of Nigeria (CIA World Factbook, 2012). The ailment has common outcomes all over the globe and is known to influence a major portion of the Nigerian

population. In 2012, the prevalence rate of HIV in Nigeria was 3.1% among adults aged 15 to 49 years—the second highest prevalence in the world. However, the situation was found to be complex and varying significantly between regions. The HIV epidemic has been more severe in certain states, where it has been driven mainly by high-risk behaviors (CIA World Factbook, 2012).

Other states have exhibited more generalized epidemics primarily sustained by multiple sexual relationships. The commonly identifiable risk factors have been prostitution, risky practices associated with itinerant work, and high prevalence of sexually transmitted infections (STIs; Tamang, Nepal, Puri, & Shrestha, 2001). This may explain why youth and young adults are more vulnerable to infection and why young women have a higher risk than young men (CIA World Factbook, 2012), but the exact causes remain unclear.

This study was designed to address a gap in the existing literature concerning the relationship between HIV knowledge, religious beliefs, altitudes, and risky sexual behaviors within urban versus rural regions in Nigeria given the increase in HIV infections in the country. Previous studies had failed to demonstrate a clear link between key indicators of the Nigerian population's characteristics and the health situation in the country. Thus, this study used indicators of population characteristics such as sexual activities, knowledge about AIDS as an STD, as well as the associated behavior (Salako, Iyaniwura, Jeminusi, & Sofowora, 2006) to test the desired relationships. To cover the existing study gap, this study examined the relationships between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors of people living in urban versus rural regions in Nigeria (Slonim-Nevo & Mukaka, 2005).

Problem Statement

In the past decade, women have become infected with HIV at greater rates than men (CIA World Factbook, 2012). Factors contributing to expanding epidemic conditions among women in Nigeria include polygamy and restrictions on the emotional exhibition of thoughts concerning sexual matters (CIA World Factbook, 2012). The increase of multiple sex partners among urban-based women in the age group of 15-29 years has also seemed to contribute to infection rates (CIA World Factbook, 2012). Lack of sexual education and widespread religious dogma increase the stigma on those who are infected (Bing, 2008). Unfortunately, no widespread prevention education programs have been formulated to bring about the prevention of the ailment, and these factors lead to nonsubstantial support of women and an unwillingness of most men to use sexual protection during sexual intercourse (Shesgreen, 2010). Additionally, social values and ethical considerations that do not promote the use of protection measures such as condoms, which are perceived as taboo, provide a significant contribution to the efficacy of HIV transmission among the Nigerian population (Bogart et al., 2005).

To conduct this quantitative research study, a survey questionnaire was distributed among the target population by Measure DHS/ICF Macro of Calverton, Maryland (DHS 2013), and the data from that survey was utilized for this study. The study may be important in providing applicable results to the Ministry of Health and other stakeholders such as individuals, families, and communities regarding the fight against increasing HIV infections in Nigeria.

Purpose of the Study

This quantitative correlational study was designed to test the relationship between attitudes, religious beliefs, knowledge of HIV infection, and risky sexual behaviors in order to gather data about the spread of HIV in rural and urban regions of Nigeria. By providing a substantial amount of information, the study may result in behavioral changes among Nigerians and influence their perception of sexually transmitted infections. The relationship between attitudes, religious beliefs, knowledge of HIV, and the sexual risk behaviors of people living in rural and urban Nigerian regions were examined using the NDHS 2013 survey.

The research objective was to test the association between HIV knowledge, attitudes, religious beliefs, and the effect of these variables on HIV risk-related sexual behavior in urban and rural areas of Nigeria. It is important to identify effective ways to prevent the spread of HIV.

Research Questions and Hypotheses

Research Question 1

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the risky sexual behaviors of people living in urban versus rural regions in Nigeria? The covariates to be controlled are gender, sexual partners over the past years, age at first sexual encounter, socioeconomic status, and literacy level.

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the sexual risk behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to sexual risk behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

Research Question 2

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and sexual risk behaviors of people living in urban regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the sexual risk behavior (unprotected sexual intercourse) of urban people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to sexual risk behavior (unprotected sexual intercourse) of urban people in Nigeria.

Research Question 3

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors of people living in rural regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to sexual risk behavior (unprotected sexual intercourse) of rural people in Nigeria.

Theoretical Framework

Research on behavior among people in Nigeria, especially adolescents, has been conducted within the social-psychological framework of problem behavioral theory

(Begg & Gulliver, 2008). The theory is fundamentally based on three psychological influence systems: the perceived environmental influence, personality system, and behavior system. Begg and Gulliver (2008) asserted that within each of the three systems, there are factors instigating participants' engagement in problem behaviors (risk factors) or leading to control against such behaviors (protective factors). The theory of problem behavior can be applied to enhance the understanding of sexual risk behaviors among the Nigerian people. The model could be represented as shown in Figure 1 below.

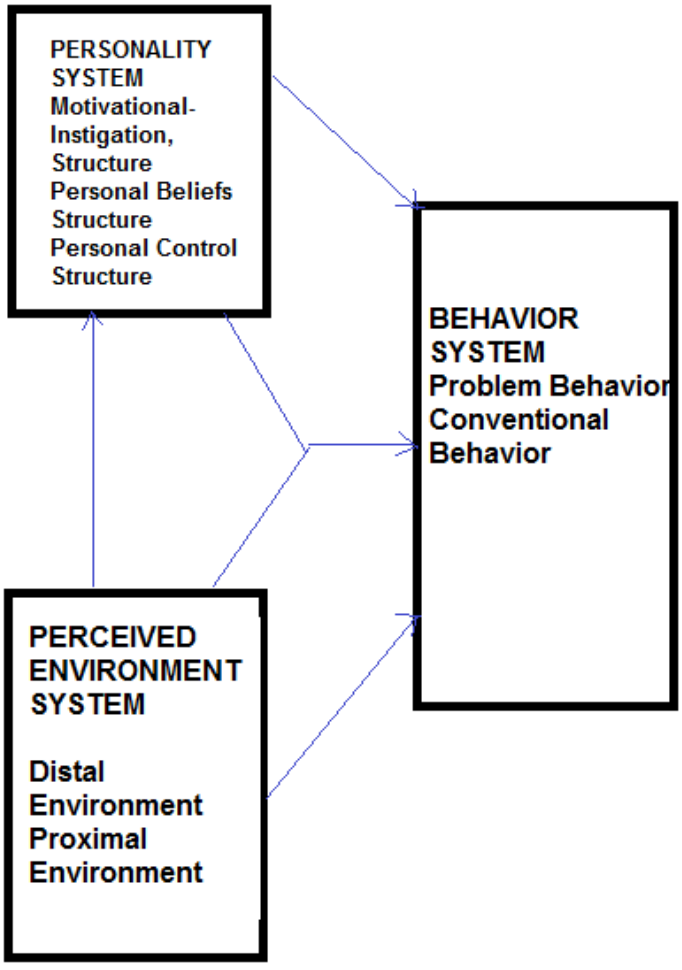

Figure 1. Components of problem behavioral theory. Adapted from *Encyclopedia of Applied Developmental Science*, by J. Donovan, 2005, City, ST: Publisher.

The above model is linked to the variables tested in this study. The personality system involves personal belief as a component of religious belief and entails motivational instigation that arises from attitudes toward the sexual behavior. The personal belief also contributes to personal control structure. The environment also makes a significant contribution to which aspects (e.g., peer influence and religion, among others) work collaboratively to influence attitudes, beliefs, and knowledge about HIV. The behavior system, on the other hand, entails the results of the interaction of the perceived environment and personality system.

Another important theory in this regard is Bandura's (1986) social cognitive theory. This theory helps in understanding the factors associated with behaviors contributing to sexual risks among individuals in the treatment of substance abuse. The theory has often been used to assist in promoting interventions. It can, as well, be used for predicting psychological change that is achieved by various treatment modalities. Bandura's social cognitive theory could also be applied to determine the way to prevent risky sexual behaviors, as illustrated in Figure 2.

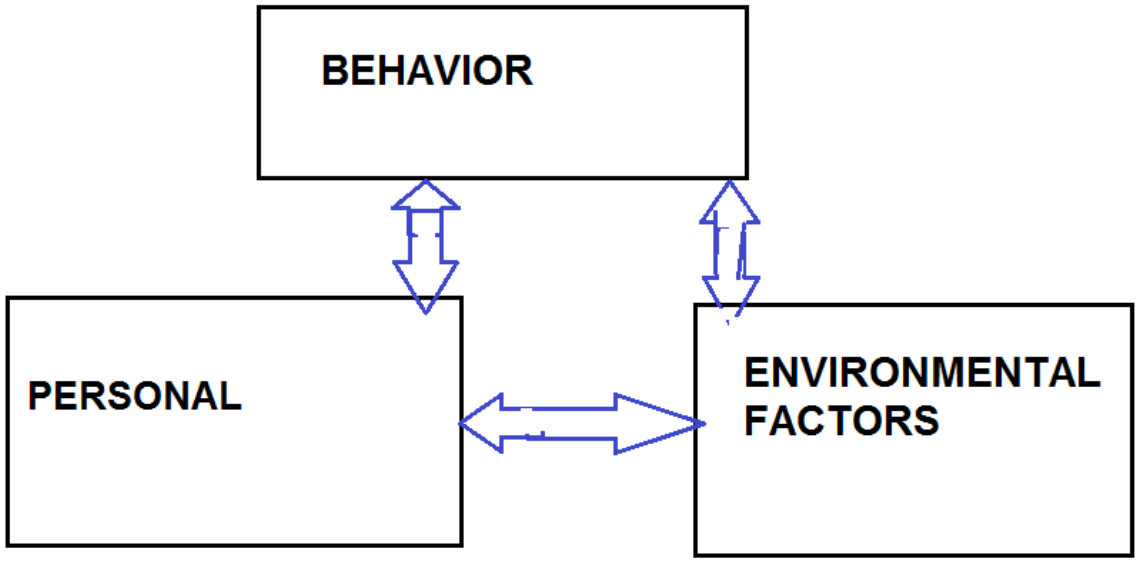

Figure 2. The components of social cognitive theory. Adapted from *Social Foundations of Thought and Action*, by A. Bandura, 1986, Englewood Cliffs, NJ: Prentice Hall.

The above model shows a case whereby behavior, personal, and environmental factors work closely to influence the condition of HIV in Nigeria. Personal factors in this case may include attitudes and knowledge of HIV. Environmental factors may include religious activities/beliefs and peer influence, among others.

The concept of HIV awareness is also another concern that mainly involves the individual (Goel, Khanna, & Kishore, 2010). It, therefore, corresponds with the fractions of things that are numbered for an individual to perform that are not just important but essential in the being and formation of a personality and the overall mindset of an individual. The philosophical assumption of this theory is that individuals are interested in how they want things to be in the present, how they already are, and what they can do to make things right while not repeating the same mistakes (Goel, Khanna, & Kishore, 2010). The envisioning process of therapy and counseling ensures that the individual has

in mind the preferred and required tasks and, in thinking about them, is forming a positive approach toward life and its benefits and offerings. Together, the therapist and the person move toward a smaller or larger increment in the personality traits and individual capacities that can be encountered. When these smaller changes tend to be focused on the larger ones, that is when the success of a particular theory comes into being.

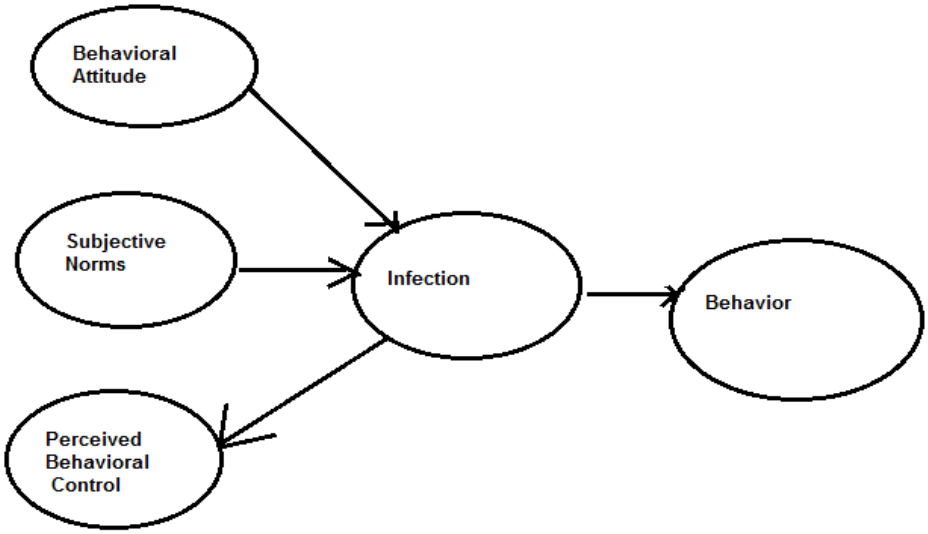

Figure 3. Conceptual structure of behavioral concept. From "Knowledge About HIV/AIDS and Sexual Practice Among University of Ibadan Students," by C. J. Ogbuji, 2005, *African Journal of Medical Science, 34*(1), 25–31.

Human behaviors are highly contributive to HIV, which is transactional and can be shared in different forms. Most of the theories in this category have been developed to explain human behaviors, their contributions to HIV, and possible ways of generating control measures. For instance, engaging in risky sexual behaviors is an aspect of this theory. Such risky sexual behaviors are linked to the individual's attitude toward sexual behaviors such as the use of protection during sex. Religious beliefs also contribute to the

same because religion plays a critical role in advising against some behaviors. Furthermore, one's knowledge about HIV plays a significant role in determining one's attitudes toward some sexual behaviors. This theory was, therefore, the most applicable in this study because it was only based on variables that supported the covariates to be derived from the NDHS (2013), which included sexual partners over the past, including age at first sexual encounter, type of place of residence (urban and rural), months of abstinence, literacy level, and exposure to knowledge and availability of contraceptives.

Nature of the Study

This study was based in a desire to create a sense of balance and integration for general readers and individuals about HIV infection and its association with attitudes, religious beliefs, and sexual risk behaviors. For the NDHS 2013 research, survey questionnaires were distributed among the target population by Measure DHS/ICF Macro of Calverton, Maryland. For this study, I only needed to conduct data analysis based on the NDHS 2013 survey. The independent variables in this study were attitude (measured by the NDHS 2013 attitude subscale evaluating attitudes toward sexually transmitted infections), religious beliefs (evaluated by the NDHS sexual risk behavior subscale), and knowledge of HIV (evaluated by the NDHS knowledge about HIV subscale). The dependent variable was sexual risk behavior (measured by the NDHS sexual risk behavior scale).

This study used a nationally representative sample of the Nigerian population from the NDHS (2013), in which the researchers assessed HIV knowledge, religious beliefs, and attitudes of the participants, including their behavioral choices with regard to sexual practices. The selection of the sample involved a stratified, two-stage cluster

design. Three different questionnaires were used: a men's questionnaire, a women's questionnaire, and a household questionnaire. This study employed a quantitative research method that included testing of hypotheses based on data from the survey. A quantitative method was best suited for this research because I was comparing two groups to determine the association between the independent variables (attitudes, religious beliefs, knowledge of HIV) and the dependent variable (risky sexual behavior).

Definition of Terms

HIV Infection

HIV is the abbreviation for *human immunodeficiency virus*. The disease is known and identified as a life-threatening one because it breaks down the immune system, which is responsible for all of the possible protective mechanisms of the body. HIV causes people to get sick with various ailments, mostly infections, which affect them in a significant manner. Efforts have been in place to combat the problem, but treatment or vaccination has not yet been discovered. Prevention of risky sexual behaviors is thus the key to control of the problem (Wutoh et al., 2006).

Risky Sexual Behaviors

Risky sexual behaviors are those that can enhance the chance of sexual disease contraction and transmission or increase the occurrence of unwanted pregnancy. Sexual risk behaviors include having one or more sexual partners; frequent change of sexual partners; having vaginal, oral, or anal sexual contact without using proper protective measures; and use of inconsistent and improper birth control methods or improper use of birth control (Essien, Ogungbade, Kamiru, Ekong, &Ward, 2006). This variable waswas measured using a subscale from the NDHS (2013).

Perceived Risk

Perceived risk can be defined in terms of a process of being personally influenced by AIDS/HIV in some manner, such as observing a person die due to the disease. Personal exposure perception results in the adaptation of secured behavior and analytical calculation. Therefore, having knowledge of someone dying due to HIV infection is expected to induce practices such as the use of condoms as a protective measure against the ailment overall (Essien et al., 2006).

AIDS

AIDS is the abbreviation of *acquired immunodeficiency syndrome* and represents multiple diseases associated with HIV, from an initiating infection to later serious symptoms and consequences. It causes consistent damage to the organ systems, in particular the immune system. When followed by a prolonged period of illness without symptoms, the side effects can ultimately result in central nervous system damage as well. It can be prevented through behavioral change and ensuring safe sex, among other preventive mechanisms, but it cannot be cured (Terry et al., 2006).

Attitude

Attitude refers to one's feelings or disposition toward sexual encounters (Essien et al., 2006). In this study, attitudes waswas measured using an attitude subscale from the NDHS (2013).

Knowledge of HIV

Knowledge in this particular case involved awareness and information about HIV/AIDS before having a sexual interaction (Terryet al., 2006). In this study, knowledge waswas measured using a knowledge subscale from the NDHS (2013).

Religious Beliefs

The term *religious beliefs* refers to a particular set of applications, values, symbols, and services estimated to provide sacred entities through promoting an awareness of an individual's accountability to and association with others at a social platform in the community settings in this study. Religious beliefs waswas measured using a religious beliefs subscale from the NDHS (2013).

Assumptions

Various assumptions are made in the course of conducting any study. First, it was assumed that all of the participants gave honest answers to the survey questions. It was also assumed that all participants provided accurate information regarding their knowledge about the subject and its areas, such as knowledge of STIs and sexual risk behaviors. Another assumption was the existence of good relationships between the participants, the researchers, and the host country, which enabled the sharing of personal information such as HIV knowledge as well as high-risk behaviors. The survey instrument was assumed to be reliable and to have been appropriately administered. It was further assumed that informed consent was gained before conducting the survey. Another assumption was that the reliability and validity of the survey instrument were established before conducting the survey.

These assumptions were critical in conducting this research because it would have been difficult to use the secondary data of the NDHS (2013) if failure to follow research protocols had led to flaws in the data. The assumptions were also important because this quantitative study had to be consistent with the positivist research paradigm, which involves seeking out the causes of phenomena.

Scope and Delimitations

This study reflects the entire Nigerian population, given that the NDHS (2013) data have the same scope. This means that it might be possible to generalize the results to the entire Nigerian population. The delimitations of the study included sexual partners over the past, age at first sexual encounter, type of place of residence (urban and rural), months of abstinence, literacy level, and exposure to knowledge and availability of contraceptives. The inclusion criteria encompassed men within the age range of 15 to 59 years and women within the range of 15 to 49 years. This difference in age range was applied because men tend to be more active sexually than women after 49 years of age due to the effects of menopause on women. Further, only permanent residents of Nigeria were considered in order to categorize the type of residence of each participant.

The original study was mainly conducted through Measure DHS/ICF macro with a survey instrument, which was provided specifically to establish both adequacy and accuracy. The original researchers nevertheless failed to focus on either HIV testing or status as part of the purposes in both rural and urban regions in the country. The focus in this regard was based on the increasing impact of HIV infection in Nigeria, leading to sociocultural disturbances as well as threats to the entire health care system in Nigeria (Kovach, 2010). The purpose of the study was to explore the existing relationships between attitudes, religious beliefs, knowledge of HIV, and the effect of these variables on HIV risk-related sexual behavior in urban and rural areas of Nigeria. These variables was used after controlling for respective covariates used in the NDHS (2013) data.

The original study was conducted using a survey instrument that was pretested as a way of ensuring accuracy and adequacy. This study thus was conducted following

increasing HIV infections and their impact in Nigeria. Increases in HIV infection led to various social-cultural disturbances as well as increasing pressure and threat for the healthcare system in Nigeria. The study in this case was guided by Bandura's (1986) social cognitive theory and problem behavioral theory, among other theories (Raj, Silverman, Wingood, & DiClemente, 1999). While the health belief model (HBM) might have been used in the study as well, it has been found to be weak in accounting for substantial variance regarding human behaviors, which made it inapplicable to this study. The research did not address interventions outside the study scope, which could have been culturally appropriate, further depicting delimitations of the original study. All variables was obtained from the NDHS (2013) as the main resource. Generally, the study results could be important to program planners in constructing interventions that are culturally based and that could generate a positive impact on HIV control within Nigeria. The findings in this case can only be generalized the target population in rural and urban regions of Nigeria.

Limitations of the Study

This study was based on prior survey results concerning self-reported HIV knowledge and religious beliefs about sexual activities and sexual risk behaviours, as well as attitudes toward sexual activities. In this regard, whether the study participants accurately and honestly revealed their own sexual behaviors, attitudes, religious beliefs, and perceptions and HIV knowledge could be difficult to determine. The study also had another limitation, in that it would be difficult to establish any casual inference because of the cross-sectional design that was used in the study (Raz & Lindenberger, 2011). This means that the study findings need to be interpreted with much caution. Another major

limitation was a language barrier, especially when dealing with non-English-speaking Nigerians. Some of the respondents may have failed to understand all of the questions and may have provided vague responses as a result. The use of nonrandomized convenience method of sampling was likely to lead to sampling bias, which could further limit the effective generalization of the study to the Nigerian population.

The findings in this case can only be generalized to the target population in rural and urban regions in Nigeria. The collection of original data was done in 2013, which makes the data over a year old. This brings out some questions regarding its reliability, which further make it difficult to generalize the study findings beyond the study population. Besides, few methods for examining the criterion validity of this study existed, which led the researchers to use several approaches for creating a congenial atmosphere as well as making the respondents comfortable in the course of completing their questionnaires (Benagiano & Mori, 2009). In the original study, other confounder variables, such as geography, age, marital status, and education, were controlled for in the course of statistical analysis. Reasonable measures for addressing limitations may include the control of other factors such as poverty, multiple sexual partners that are concurrent, as well as age, which are key drivers of the HIV epidemic in the country (Onyenoho, 2009).

Significance of the Study

Issues surrounding HIV infection such as AIDS and other effects such as morbidity and mortality make the study significant in various ways. A large proportion of Nigerians had lived with HIV by the time the data were collected in 2013. At the same time, the number of AIDS-related deaths has been increasing with time. Nevertheless, no

effective vaccine for HIV exists, and thus, only intervention measures can be successful. Such measures are possibly attainable through the application of the research results. The outcomes in this case include possible prevention applications as well as increased awareness by the Nigerian government due to the study results. Further, the study may have a positive impact on the local community and ease the healthcare burden in local hospitals. The study is significant because it identifies and highlights various sociocultural factors such as HIV knowledge, attitudes, and religious beliefs toward sexual behaviors and the way in which such factors influence sexual risk behaviors among people living in Nigerian urban and rural areas.

Identification of such factors could be an important step in enhancing awareness of HIV and prevention of pandemic. The study may provide information about the importance of being protected against HIV. The results may be incorporated with theoretical knowledge on social-cognitive variables to enhance further understanding of the way in which individuals may take on positive preventive behaviors as well as the way religious beliefs, attitudes toward sex, and HIV knowledge could influence sexual risk behaviors. This could lead to insight on the study variables' impact on the spread of HIV among Nigerians, thereby creating positive social change by assisting policy makers in health care as well as workers in the same sector in the design of HIV campaigns that are effective (Muhammed, Ijadunola, Fatusi, & Olasode, 2010). Individuals may be influenced to lead healthier lives, which in turn may contribute to complete families, especially by reducing the number of HIV-related orphanage cases. Positive changes in risky sexual behavior and sexual education may reduce HIV incidence so that individuals and families do not spend as much on HIV-related health problems.

Summary

HIV in Nigeria was first detected in the year 1985 (Ucheagu & Hatwig, 2010). Today, it has the third highest ranking internationally in the number of people infected with and suffering from HIV/AIDS. These patients are not only experiencing medical consequences, but also have social, medical, and economic stressors. Factors contributing to this situation in Nigeria have included the encouragement of multiple sexual partners, denial of AIDS as an epidemic, and inadequate awareness regarding condoms and additional sexual protection methods (Bogart, Kral, Scott, Anderson, Flynn, Gilbert & Bluthenthal, 2005). Official statistics have indicated that the epidemic condition of HIV has been relatively slow in influencing the conditions of Nigeria in terms of economic and social tendencies (Bogart et al., 2005).

Various countries and regions are today working in an appropriate manner to stabilize the condition of HIV. Despite this effort, the overall HIV incidence is still greater than it was before (Bogart et al., 2005). The registered cases and deaths every year are an indication of that. The NDHS 2013 provided an opportunity to establish the relationship between factors such as attitude toward sex, religious belief, HIV knowledge, and sexual risk behaviors in rural versus urban regions in Nigeria. This was guided by various theories, with the main ones being Bandura's social cognitive theory (1986) as well as problem behavioral theory. The findings may help health care planners to design programs targeting such variables with a view toward reducing the spread of HIV alongside its associated effects in Nigerian society.

In Chapter 2, I discuss the literature search techniques used to obtain information about the relationship between attitude toward sex, religious belief, HIV knowledge, and

sexual risk behaviors in rural versus urban regions in Nigeria. In the literature review, I analyze literature published between 2000 and 2013 and compare it to other populations.

Chapter 2: Literature Review

Introduction

HIV/AIDS is considered a worldwide pandemic, with current infection rates representing the biggest health problem for both developing countries and first-world countries. Millions of people have died from the infection since it was initially detected and identified in the 1980s (Ucheagu & Hatwig, 2010). Following the establishment of the joint United Nations Programs on HIV and AIDS, some of the earliest estimates were that there were around 33.2 million people living with HIV (Okulate, Jones, & Olorunda, 2008). As of 2013, the global figure for people living with HIV was 35 million, which represents .08% of the world population (UNAIDS, 2014)

Rates of sexually transmitted infections (STIs) are also rapidly rising. According to the Nigerian developments, the condition of HIV has to be dealt with thoroughly, keeping in mind the demographic composition and socioeconomic condition of Nigeria as a whole. HIV and AIDS have not been well documented or presented in the literature or even in clinical fields as an issue of health, but they are directly associated with the demographic and socioeconomic background of Nigeria (O'Leary, Goodhart, Jemmott, & Boccher-Lattimore, 2002).

Nigeria has the second highest number of HIV cases in Africa (CIA World Factbook, 2012), with 3.17 individuals living with the virus, according the CIA World Factbook (2012). Though there are programs in place for the prevention of HIV, the death toll is increasing in Nigeria, thereby making the developmental and health-benefitting goal of eliminating HIV seem difficult to achieve due to the prevailing impact of the disease. In order to fulfill the requirements presented by different health

organizations, it is imperative for the Nigerian government to implement programs to provide additional support to address the HIV epidemic in Nigeria (Onah, Mbah, Chukwuka, & Ikeme, 2004).

The objective of this paper is to provide an evaluation of the association between attitudes, religious beliefs, and knowledge of HIV and its association with sexual risk behaviors. Research and theoretical implementations have helped to spread an understanding of the relationships between religious beliefs, attitudes, and knowledge as well as sexual risk behaviors, but these have not yielded any links between these elements. By deducing how attitudes, religious beliefs, and sexual risk influence the spread of HIV, researchers and clinical professionals may be able to bring about inventive ideas for reducing the occurrence and pervasiveness of this virus in Nigerian rural and urban regions (Olley, Ephraim, Lasebikan, & Gureje, 2006).

This chapter outlines previous studies associated with HIV knowledge, attitudes, and behavior responses among urban and rural Nigerians. The conditions of HIV in Nigeria wasare outlined with the presentation of theories and the conceptual framework involving the identification of any literature gaps that exist. If there is any need for planning and management targeting the habits of rural and urban Nigerians, it was carried out by the government through the country's Ministry of Health, based on the constructive phenomenon of conceptualization and management of information (Olley et al., 2006). All changes was implemented accordingly after the research is complete.

Literature Search Strategy

To determine how actual values and interpretations of attitudes, religious beliefs, and sexual risk influence the epidemiology and spread of HIV, I conducted a literature

search of major international research collaborations and Nigerian regional perspectives. Because the research would be carried out in urban and rural regions of Nigeria, there were several types of materials that waswere useful for the literature review. Given that the research was designed to depict the impact of attitudes, religious beliefs, and sexual risk influences on the spread of HIV, the search terms and combinations of search terms revolved around similar topics and considerations. These terms were primarily chosen to measure basic unsuccessful methods of HIV control. The search included the following:

- Search of electronic databases including PUMBED, MEDLINE, and EMBASE. Terms used were *HIV/AIDS*, *risk behaviors*, *Nigerian development*, *adolescents*, *attitude*, *behavior*, *knowledge*, *systemic review*, *young people*, *global pandemic*, *HIV epidemiology*, and *global health*.
- Search on review systems such as ProQuest using terms such as *HIV*, *AIDS*, *sexual risk behaviors*, *overall health*, *physical activity*, *HIV in Nigeria*, *public health*, *prevention of HIV*, *causes of HIV*, and *health routine*.
- Google advanced search using the terms *physical activity and HIV*, *HIV prevention and intervention*, *impacts of HIV*, and *motivation for HIV*.
- Online search of the last 5 years of the SAGE Journals. Limitations for these journals regarding the issue of HIV were kept for individuals ranging between the ages of 18 and 40 years. The content and abstract reviews were scanned to identify information focused on life stages and routines of specific individuals, such as those living in rural or remote areas, overweight kids, and HIV-positive children under 10 years of age.

- Google Scholar search using words such as *HIV*, *AIDS contraction issues*, *community development*, and *rehabilitation*.

In the event of sparse current research on any particular term, references from different journals were taken for measurement analysis and configuration. A search of expert-guided international websites was also performed to assure that all aspects of the research were being covered and analytically processed. Websites such as the CDC's physical activity website and the Centre for Health Policy Promotion provide a better system of recruitment and planning in such regards. Specific conference proceedings and their notational figures were also used.

The information from the databases served an important purpose, as there is a limited amount of knowledge regarding the treatment and prevention of AIDS within the behavioral sciences. The search parameters were restricted to the publication years of 2000 to 2013 because the most updated pieces of evidence and control measures are provided in the literature. The relevant conditions of analysis were to be formulated in accordance with ailment symptoms and signs, which was why the study mechanisms were so prompt and controlled.

Theoretical Foundation

The study was founded on the social cognitive theory of Bandura (1986) as well as the behavior theory developed by Jessor and Jessor (1977). The application of the two theories in recent studies initiated the decision to incorporate them in this study. A study by Reynolds, Magidson, Bornovalova, Gwadz, Ewart, and Daughters (2010) made use of social cognitive theory in the examination of factors associated with high-risk sexual practices among people within residential treatment facilities for substance abuse. The

behavior theory was also used by Deleo and Werfert (2013) to examine problematic use of the Internet to access pornographic materials as well as other sexual risk behaviors among college students.

In the case of social cognitive theory, three cognitive concepts are involved. Regarding the first concept, individuals are able to learn through observation. The second concept is based on internal mental states, which constitute an important part of the whole process. The third concept is based on the assertion that learning does not necessarily contribute to behavior change (Bandura, 1986). Based on such concepts, the social cognitive theory of Bandura was highly useful in this study, especially given that there was the need to establish the possibility of finding differences in HIV knowledge levels in rural versus urban Nigerians. It was also useful in establishing whether such differences could predict the engagement of individuals in sexual risk behaviors.

Problem behavior typically consists of social cognition, beliefs, and attitudes, as well as individual values. With respect to such constituents, this study involved an examination of the way in which certain attitudes that are held by people in Nigeria correlated with maladaptive behaviors, especially sexual risk behaviors. Such attitudinal beliefs are often considered negative social orientations that are antecedents to poor decision making, thereby contributing to the high-risk sexual behaviors being studied in this research. Problem behavior theory was also applied in explaining the way in which knowledge concerning HIV transmission contributes to decision making. According to the theory, while people may have correct knowledge, environmental factors may influence their behaviors. Thus, the two theories were applied in this study to explain certain behaviors, which may or may not be detected in this study results.

Global HIV Infection

Generally, HIV infection has been transformed from a certain death sentence to a chronic illness that can be managed. Over the past 30 years since HIV was recognized as being the causative agent of AIDS, over 25 million individuals have died of the virus (Moss, 2013). In this regard, HIV has been identified as a global pandemic and has multiple contributing factors for contraction, transmission, and spread overall. In 2005, about 35.3 million individuals were suffering and living with HIV internationally (UNAIDS, 2005). Out of this population, approximately 17.2 million individuals were men, 16.8 million were women, and 3.4 million were children (under 15 years of age). The death toll recorded from AIDS in the year 2010 was about 2.8 million—an increase from 2.2 million in 2005 (UNAIDS, 2005), indicating that there has been a tremendous exacerbation in the situation over the course of time (UNAIDS, 2007).

Sub-Saharan Africa is one of the regions most severely afflicted with HIV. According to information derived in the year 2010, 68% of all HIV cases and 66% (1.2 million) of all AIDS-related deaths were from this region. About 5% of the adult population suffered from this infection, which is a matter of concern. The contraction of HIV cases in this region is clear enough, as women account for about 60% of those suffering or carrying the disease. South Africa alone is said to have a substantial population of individuals suffering from HIV, a count of about 5.9 million (UNAIDS, 2008).

Southeast and South Asia (population of about 2 billion as of 2010, over 30% of Earth's population) has been calculated to have 4 million HIV cases (12% of the individuals overall who are living with infection); the death toll in 2010 alone was about

250,000. India has a very high number of cases, where the occurrence and prognosis of the condition is provided at a rate of about 0.3%. In the regions of East Asia, 0.1% is the ratio of prevalence. Community behavioral responses toward HIV, including those that involve stigmatization, gender inequality, unemployment, and poverty, can be among the contributing factors to high cases of HIV in the area (UNAIDS, 2008).

HIV, therefore, is recognized internationally as one of the most common causes of disease that has created stress on a global level (United Nations Development Program, 2006). The counts of individuals dying from it are variable, depending on the health care techniques and priorities of specific countries. The consistent rise in the death toll in multiple developing countries indicates that lifestyle changes and scientific precautions have not been given appropriate attention. Consequently, policymakers in developing countries must take into account behavioral modification regulations that will help decrease the prevalence of the virus through social reform (UNAIDS, 2009).

Transmission of HIV

HIV is spread by one of three transmission modes: parenteral, sexual, and mother-to-child (United Nations Development Programme, 2006). HIV 1 is the form of the virus that is responsible for the global transmission of the viral tendencies. HIV 2 is said to have less transmission capability; it is restricted mostly to West Africa. At present, there is no supportive material to indicate that different forms of HIV 1 have different transference possibilities (Aisien & Shobowale, 2005).

Sexual transmission of HIV is by far one of the most common transmission modes. The possibility of a person being infected through sexual intercourse relies on the mode of sexual intercourse and the chances of unprotected sex with a partner who is

infected, so patterns of sexual behavior and HIV knowledge are of considerable significance (Ajdukovic & Prisin, 2001). Prevention and intervention efforts have been implemented to alter sexual behavior and promote condom use (Amirkhanian, Tiunov, & Kelly, 2001).

The possibility that an individual was exposed to HIV during sexual intercourse depends on numerous factors. Male-to-female transmission is said to be 2-3 times more effective than female-to-male transfer, and there is some support for the notion that initial sexual activity for females may be linked with especially high chances of transmission. Infection cases are said to be greatly increasing with the implementations of oral sex, but this mode of transmission, although risky, has fewer negative outcomes than penile-vaginal or penile-anal intercourse (Bibikian, 2004).

Parenteral HIV transmission happens among intravenous drug users (IDU) when they share needles and other materials that have contact with bodily fluids. Transmission prevention between such individuals can be achieved through community interventions and constructive approaches such as therapy and counseling (United Nations Children Fund, 2007).

Mothers with HIV transmit the virus to their children in 90% of cases worldwide. A major portion of these infections occurs *in utero*; the rest occur during breastfeeding. Long-term therapies and control mediations have proved to have beneficial outcomes, but there are some complications that require appropriate alternatives that are safer and not appreciating enough for the disease (United Nations Children Fund, 2001). The risk of acquiring the virus through blood transfusion should also be a theme in education efforts. People may not contract HIV through “immoral” behaviors such as unprotected

intercourse; they may contract it through a transfusion involving contaminated blood. This seldom happens today due to advancements in medical technology, but it is worth considering.

HIV in Nigeria

Nigeria has the second largest population of HIV patients in Africa. Overall, the region has an enormous population of people living with the infection. Regardless of the challenges that it is facing in institutional reform, the country, more than any other in this region, has observed local populations placed on medications that are lifesaving (Zimet, Hillier, Ellick, Krowchuk, & Williams, 2000).

From 1986, when HIV was first reported in Nigeria, to 2011, 3.4 million individuals lived with HIV, and 1,449,166 individuals needed some form of support to solve the problem (UNAIDS, 2013). Records now show a representation of about 200,000 AIDS-associated deaths overall within the country. The initial cases of HIV were recorded by Nigerian health sectors in 1986, consequently bringing about the awareness of a pandemic countrywide (Adegbola et al., 1999). As a result, following regulations and guidelines from the World Health Organization, the government brought about a surveillance system for the assessment and evaluation of patients. Sentinel surveys derived information regarding those who needed care; the ratios of such patients increased from 1.8% in 1991 to 5.8 % in 2001, declined to 5 % in 2003, and increased again to 4.4 % when recorded in 2005. This was controlled and followed by an increase of 4.6 % in 2008, followed by a consistent decrease to 4.1 % in 2010 (Wutoh, Kumoji, Xue, Campusano, & Ofosu, 2006).

With a calculated population of 162 million, Nigeria is said to be heavily populated in terms of individual capacity in the Sub-Saharan region. The most updated procedure for HIV monitoring indicates that about 3.5 million individuals are infected with the disease, making Nigeria second only to South Africa and India in HIV infections (Wilson, 2005). Though the median level of such statistics has decreased over time, the overall number of people living with HIV has increased by about half a million in the last 3 years, and mortality related to AIDS has increased significantly as well. Deaths resulting from the disease annually have increased to about 217,148 as an immediate consequence of HIV infection overall (Whitbeck, 2009).

Even as HIV rates in the region have significantly dropped since the 1990s, they have increased within specific populations and groups of individuals such as sex workers and men having sex with men. Women 49 years of age or younger have the highest HIV incidence rates, and transmission from mother to child is now responsible for about 10% of new cases. The north central region has the highest occurrence rates, and urban areas have more cases of HIV than rural ones (Terry, Mhloyi, Masvaure, & Adlis, 2006).

Fundamental risk concepts involved in the HIV pandemic in Nigeria involve low perception of risk involvement, multiple concurrent sexual partnerships, intergenerational and intense transactional sex, and ineffectual services for STIs. Poor health services and lack of quality improvement programs have further exceeded the rational development of such disorders in the health sector overall. Fixed patterns of gender inequality and inequity in combination with increasing poverty and stigma related to HIV/AIDS have also contributed in a significant manner to the ongoing spread of infection (Tamang, Nepal, Puri, & Shrestha, 2001).

Table 1

Key Facts: Epidemiology of HIV in Nigeria

	2008	2012
National median HIV prevalence	4.6%	4.1%
Estimate number of PLWHIV	2,980,000	3,459,363
Annual AIDS deaths	192,000	217,148
Number requiring antiretroviral therapy	857,455	1,449,166
New HIV infection	336,379	388,864
Total number of AIDS orphanss	2,175,760	2,193,745

From "An Examination of Knowledge, Attitudes, and Practices Related to HIV/AIDS Prevention in Zimbabwean University Students: Comparing Intervention Program Participants and Non-Participants," by P. E. Terry, M. Mhloyi, T. Masvaure, & S. Adlis, 2006, *International Journal of Infectious Diseases, 10*(1), 38–46.

According to a report provided by the UNAIDS by the United Nations, more than 80 million Africans could possibly die from the outcomes that are associated with AIDS by the year 2025, and infections could increase in the population in an equally increasing manner to about 90 million, or more than the population count that is present. African regions, particularly those in Sub-Sahara, provide the largest percentage and population ration of the global epidemic as discussed earlier; these cultivations are stronger in Southern Africa and East Africa, even more than what they are found in Nigeria (Takacs, 2006). However, the spread of such tendencies is greater in nature within Nigerian regions. These higher prevalence ratios are responsible for the attribution of an earlier start of the disease in different regions. Different behavioral responses are also posing risk characteristics to the ailment through which assessments needs to be brought about to

captivate better treatment options. Urban and rural Nigerian regions have been found to have different, more pathogenic transmission strains of HIV virus, which is a definitive exposure to the ailment, through a combination of elements approached (Trenholm, 2007).

HIV Infection and Religion

An understanding of the way religious factors add to shaping beliefs, reinforcing behaviors, and constructing attitudes could enhance the support for individuals living with HIV. In certain cases, religious values are likely to affect individual sexual behaviors. This aspect then leads to increased or sometimes decreased chances of contracting STIs. The possibility of disclosure as well as the attitudes of individuals who have contracted HIV could be influenced by religious values. An instance of the effect of religious beliefs could be obtained from a cross-sectional study carried out by Zou et al. (2009). In this study, the researchers investigated the effect of religion on HIV in Tanzania. The study focused on how religious beliefs influenced HIV stigma, disclosures, as well as treatment attitudes. In this study, it was found that approximately 53.2% of the respondents believed that HIV was a form of God's punishment. The belief was even more predominant among the rural respondents, since over 60% of these respondents held this belief. In the same study, about 94% of the respondents from the Pentecostal denomination believed in the ability of prayers to cure HIV. About 64% of the Catholic respondents believed that prayers could cure the disease. This means that the same belief varied across denominations.

Gender is another factor influencing participant's religious beliefs as well as participant's views of HIV. In this regard, Stulhofer, Soh, Bacak, Jelaska, and Landripet

(2011) depicted this assertion. The study focused on religiosity as well as sexual risk behaviors college students in Croatia from 1998 to 2008. On a separate occasion, analyses for men and women were carried out to determine the possible religiosity influences, which are gender specific, on sexual behavior (Stulhoefer et al., 2011). In the study, it was established that the female respondents who had reported strict religious upbringings had less knowledge about human sexuality as compared to other women. Religiousness was generally negatively correlated with the basic knowledge of the aspect of human sexuality among women. Further, there was hardly any significant association found between religious upbringing and the use of condom. It was further established that religiousness hardly translated into condom use during sexual debut. Nevertheless, this study was limited because religiosity operationalization did not embrace peer religiosity indicators. This aspect could have influenced estimations of the effect of religion on sexuality. The study was summarized in such a way that the location of the institution within the capital city could have caused an impact of religiosity because of the environmental effects attributed to high-secularized urban subcultures (Stulhoefer et al., 2011).

Generally, Nigeria has diversified religious beliefs, although Christianity and Islam are the major religions. There are also the religious beliefs associated with the traditional indigenous beliefs. In this regard, complexities of the sociocultural factors influencing the awareness of HIV and that relate to behaviors like condom use call for the importance of understanding the way religion could impact knowledge of HIV as well as risk behaviors exhibited by the Nigerian people. In the same case, it is essential to

deliberate the number of sexual partners among people living in Nigeria. This needs to be done especially among the individuals at a high-risk of contracting the disease.

Knowledge and Health Behaviors

Preventing HIV infection through continuing education could be a significant strategy in the control of the HIV epidemic in Nigeria. This ought to be the course of action especially now that vaccines and diseases have not fully been available, accessible, or affordable. It is also important for the HIV infected patients to be profound and have the ability to keep records of all kinds of information regarding their health. If there are knowledge measurements and outcome values to be approximated, there are going to be things that will measure the overall aspects of the HIV infection as an approach as well as working consistently.

Knowledge measures are clearly measurable and if an approach is not carrying out the procedure right, outsourcing and recommended settings are going to become difficult and daunting. There is going to be less time for the measurements to be accomplished and recognized which is why everything should be carried out in right time parameters beforehand. Learning and knowing about these things is also going to provide the seller or an ailment about the mistakes they are doing along the way and the procedures on how they can fix it with the help of suitable options and settings. The volume, quantity, and proper use of rewarding with improvements will depend on knowledge measurements, which should be carried out in a timely manner (Mbago & Sichona, 2003). This is an important issue when it comes to outsourcing different aspects of sexual risk behaviors and beliefs of HIV infected individuals.

Attitude and Beliefs

Prevention is the main aspect in fighting against the HIV epidemic. Prevention, however, requires the understanding of economic and sociocultural context within which the risky behaviors occur (McCreary, Kaponda, Norr, Jere, Chipeta, Davis, & Batista, 2008). Programs meant for the prevention of HIV are based on elements that are essential for initiating and sustaining behavior changes. Among these elements, the assessment of one's risk of getting the disease is vital. According to Nakamura, Mausbach, Ulibarri, Semple, and Patterson (2011), attitudes, and beliefs regarding the use of condoms as well as social norms have been found to have some impact on the use of male condoms. The study by Nakamura et al. examined the use condom as an aspect of moderating the relationship between methamphetamine usage and the sexual risk behavior specifically in a sample of 297 men. The researchers tested for attitude moderating effect (Kaufman, Shefer, Crawford, Simbayi, & Kalichman, 2008). It was established that whenever individuals had much more negative attitude towards the use of condoms, the relationships between risk behaviors and the use of amphetamine was significant. In this regard, the risk behaviors are typically considered as engaging in unprotected anal sex with the same or opposite sex. It was concluded that individuals could actually protect their risky sexual behaviors and practices through positive attitude towards condom use.

Risk-taking with regard to sexual behaviors is largely becoming an issue within the sub-Saharan Africa region (Yeager, Hendrix, & Kingma, 2010). Such risk-taking behaviors enhance the contraction of HIV in the region. A negative attitude towards women, according to a study conducted in South Africa, contributes to further risky sexual behaviors especially concerning the use of condoms (Yeager, Hendrix & Kingma,

2010). Attitudes, as well as beliefs about condom use, alongside social norms about women roles are linked to sexual risky behaviors. Future programs for preventing HIV could only be successful if all the above-mentioned factors are addressed. Nevertheless, the ability of women to negotiate for safe sex could be a major problem given the existing beliefs, norms, and attitudes towards the position of women in the African society, which is also attributed in Nigeria (Yeager, Hendrix, & Kingma, 2010)

Risky Sexual Behaviors

In Nigeria, there are many forms of sexual risk behaviors that can result in HIV transmission. Different studies depict the factors that influence use of condoms among males and evaluated that 43% of the population overall was sexually active though condom use remained low. One in every five individuals reported using a condom during sexual activities. Factors such as residence, childhood, education level, religious association, economic and social index, and exposure to communication and media were linked with sexual experiences and application of protective techniques (Roura, 2005).

Approximately half (43%) of sexually active men in Nigeria reported condom use in the lowest manner possible and the education level played a significant role in the HIV transmission in Nigeria. Elements that increase the HIV contractions are plentiful, but for the Nigerian population and governmental associations to have successful outcomes in controlling the major issues, there is an ultimate requirement for consistent education relating safe sex (Sadob, Fawole, Sadoh, Oladimeji, & Sotiloye2006).

Racial factors and poverty can provide a significant contribution to the involvement in sexual risk behavior or exposure. Among those behavioral factors that are controlled between HIV infections and poverty, gender inequality, decreased job

opportunities for females and prostitution eventually due to a lack of suitable earning method may make this population group a risky one for the spread and transmission of HIV in the urban population. Race can significantly contribute to such factors. According to Santelli (2003), there were differences present in the racial and ethnic groups in sexual risk behaviors and sexually transmitted diseases during young men's transformation into adult males. The study provided by Santelli (2003) compared Black, White, and Latino men in United States availing higher selection mediations for the maintenance of high sexual risk, resulting in an increase of HIV contraction. These ethnic and racial contrasts in outlines and applications of sexual risk tendencies may also be combined and involved with the sexually transmitted diseases. It was deduced that black men that are HIV positive with both male and female partners engaged in sexual risk behaviors and drug abuse at the same time more than rest of the population comprising of homosexual and heterosexual individuals. HIV updated statistics (positive, negative, unknown) including factors such as sexual intercourse and poverty have all been related to the HIV transmittance and sexual risk behaviors among those individuals that are positive for AIDS (Santelli, 2006).

Literature Gap

Previous studies have never tackled factors like attitudes, knowledge, and religious beliefs based on the NDHS (2013). This failure depicts the research gap being addressed in this study. Although certain ethnic groups in Nigeria have been studied by some previous researchers, the studies have been found to portray limited generalization due to the study populations. Nationally representative data was used in the attempt to fill the study gap. The data in this regard was based on the NDHS (2013). The existing

relationships between the study variables, which included religious beliefs, attitudes, knowledge, and the sexual risk behaviors in rural versus urban regions in Nigeria, was examined in this study. The study findings were perceived to have significant impact on education programs that are targeted to both urban and rural communities in Nigeria. While in some studies other related aspects were studied like sexual behavior among Muslim males, Christian males, and male traditionalists, the NDHS (2013) study examined religions that were self-identified and religious values that could affect disclosure likelihood as well as attitudes of individuals living with HIV. The study was expanded to include both males and females. Inclusion of women and more variables helped generalize the study to a much broader population.

Summary

In this chapter, various factors have been reviewed. The most important ones include the contraction of HIV globally, impact of attitudes, sexual risk behaviors knowledge, religious beliefs, HIV epidemic in Nigeria, and the prevailing complications especially social, economic, and medical. From the chapter, it is evident that HIV contraction rates are high in the country. Nevertheless, most of the health education initiatives are found to be restricted to the urban regions because of cultural sensitivities within the rural areas according to Nwachukwu and Egenege (2008). The chapter also reveals that many researchers have been establishing the influence of the variables being studies, although no scholars have been found to have studied the relationship between the variables in urban versus rural areas in Nigeria. Based on the chapter verdict, public health workers need to establish that factors, which can contribute to the increased HIV infection risk in order to formulate policies that assist in combating the disease. This

follows the fact that HIV epidemic is highly affecting the Nigerian healthcare system, which is already fragile. The disease is a major catastrophe in both social and health aspects and highly affects the Nigerian democracy and its stability. In Chapter 3, the study design, methodology, the instrumentation and operationalization of constructs, data analysis plan, the threats validity, threats to the statistical conclusion validity, as well as the research procedures are discussed.

Chapter 3: Research Methodology

Introduction

The purpose of this study was to test the relationships between attitudes, religious beliefs, knowledge of HIV, sexual risk behaviors, and their effects on HIV infections in urban and rural regions of Nigeria. This study used secondary data from the national survey conducted by NDHS (2013) on these relationships. Through the techniques and the quantitative methods used in the study, it may be possible to provide meaningful results to aid the Ministry of Health's fight against increasing HIV infections in Nigeria. The purpose of this chapter is to provide adequate information that reflects the study. It reflects the major parts of the actual research such as the research design, population, sampling, sampling procedures, data collection, instrumentation and operationalization of constructs, data analysis, data validity testing, and ethical procedures, among other key elements. The methods, tools, and techniques used were meant to meet applicable standards and ethical requirements.

Research Design and Rationale

The design was a quantitative study in which various hypotheses were tested in terms of whether they could be accepted or rejected (Ford, 2012). Correlation between various variables was a central aspect of the research design (Ford, 2012). As one of the key objectives and aims of the research, finding the correlation between risk behaviors among members of the targeted population was indispensable (Ford, 2012). The quantitative variables were used to formulate the research questions. The variables included dependent and independent variables. The independent variables were attitude, as measured by the NDHS (2013) attitude subscale, which was used to evaluate attitudes

toward sexually transmitted infections (STIs); religious beliefs, as evaluated by the NDHS sexual risk behavior subscale; and knowledge of HIV, as evaluated by the NDHS knowledge subscale about HIV. The dependent variable was sexual risk behavior, which was measured by the NDHS sexual risk behavior scale. From these variables, it was possible to formulate three research questions. Six hypotheses were formulated from the three research questions.

The research questions could only be answered through a quantitative study (Ford, 2012). The research design was therefore appropriate for the study. The research questions were structured in such a way that they directed the research to concentrate on three statistical situations, but only under two types of populations within the broadly targeted Nigerian population. These two population types were urban and rural. The same variables waswere used in each case. In the first situation, the study compared the two types of population within Nigeria, while the second and third cases involved the analysis of the variables with respect to each of the two population types (Ford, 2012). The use of this research design seems to be the most appropriate because determining why the available prevention techniques have failed in combating and/or controlling HIV infections in urban and rural regions in Nigeria can best be achieved through a quantitative research method that involves a comparative analysis that looks at each population sample separately and then compares their results (Ford, 2012).

There were some constraints associated with this study design. First, obtaining the data required seeking permission from the respective authorities. This requirement was fulfilled with some time constraints. Additionally, there was the need to obtain permission to use __DHS data____ for my research by sending an official letter to the

Measure DHS's administrator for archival data. This process was time consuming but not costly. Approval from the Institutional Review Board of Walden University was needed to conduct the study, which further extended the time constraints for the study design.

Methodology

Population

The research was conducted for the Nigerian population in general. Nigeria is located in West Africa. The country shares its borders with Cameroon and Chad to the east, Benin to the west, and Niger to the north. The federal and constitutional republic is made up of 36 states, with Abuja being its Federal Capital Territory and Capital City (Onyeneho, 2009). The country's population is made up of both rural and urban population types, which were studied in this research involving about 33,006 participants.

Sampling and Sampling Procedures

In conducting a demographic or health survey, any issues associated with a meaningful sampling frame have to be addressed during the early planning stages. For this health survey, data were collected from individuals residing within private households. However, an up-to-date list of the targeted individuals was not readily available. The sampling frame was mainly based on most demographic and health surveys by involving a list covering the entire study area but ensuring no overlapping of the area units (Babbie, 2001). The essential traits of the units were well defined to suit the sample frame. The area units had unique identification codes. They were also set to have estimated measures of size. In the sampling and the resulting procedure, other characteristics were considered, especially urban and rural classifications (Babbie, 2001).

These were done for every covered area unit, which were considered for the stratification (Babbie, 2001).

Sampling was done for a specific purpose. It is typically difficult to conduct a study or research on every element in any targeted population. The Nigerian population is so large that not every citizen could be considered as a participant in the study, and for that reason, selecting a meaningful sample was important. Conducting the study on the entire population would have been too expensive for NDHS 2013, and hence the intended quality might not have been achieved. The researchers would also have faced too many difficulties finding every individual in the entire population. Besides, there seem to have been inclusion and exclusion criteria that were used to identify qualified individuals for the NDHS study (2013). The sample used in this study consisted of 33,006 participants (Adèr et al., 2008). By using this sample size instead of focusing on the whole population, the aim was to gather adequate information about the entire population, at a lower cost and in the minimum time possible (Adèr et al., 2008). In this regard, it was only possible to study part of the population using the selected sample. The results from the selected sample would then be generalized to the target population (Dillman, Eltinge, Groves, & Little, 2002).

The sample procedure was employed in consideration of the best way to ensure that the sample could effectively represent the target population, which formed the basis of the population validity. Validity in this regard implies the level at which the study results may be generalized for the study sample to suit the target population (Dillman et al., 2002). During the sampling process, the first step involves the identification of the analysis unit. In this regard, individuals consisted of the units to be studied. The problem

being studied was the existing HIV epidemic among people living in rural and urban areas of Nigeria and behavioral risk behaviors. The sampling was not meant to identify the extent of the problem, but rather to identify how risk behaviors along with attitudes, religious beliefs, and HIV knowledge influenced the HIV epidemic in Nigeria. In this case, however, such a sampling technique was not essential because the data were already available for analysis. It was only important to select the variables that would be useful in answering the study questions.

This study used a sample size power analysis, which was conducted in G*3.15, according to Faul, Erdfelder, Buchner, and Lang (2009). The assessment of multiple linear regressions was also conducted to assess the research questions. In this regard, a medium effect size of $f = 0.15$ was used. This medium effect size was meant to allow a maximum power level in the detection of any realized effect. An alpha value of 0.05 and the power of 0.80 were considered for the four independent variables (Gregg, 2008). At least 85 participants were required in order to achieve the set significance with the use of an effect size of .53, whereby $f = 0.02$. In this case, 85 participants were required to ensure significance for each study category (urban and rural). The total number of participants who had to be selected from the provided data was 170. This included 85 participants from each of the two areas of study considered for the NDHS (2013). Nevertheless, the data set obtained from the NDHS 2013 contained 33,006 participants.

Procedure for Recruitment, Participation, and Data Collection Using Archival Data

The collection of data for the NDHS (2013) was done with the use of three questionnaires. These questionnaires included the Household Questionnaire, the Women's Questionnaire, and the Men's Questionnaire. They were specifically developed

by the National Population Commission. Modification of these questionnaires was important to echo the population and health issues relevant to Nigeria. Translation of some questionnaires from English to other Nigerian languages, especially the three major languages (Hausa, Igbo, and Yoruba), was critical for promoting the effectiveness of the data collection process.

Informed consent was obtained by the researchers from all participants as a way of ensuring that the research was carried out in an ethical manner (Measure DHS/ICF Macro., 2008). With regard to the Household Questionnaire, all of the participants had to list typical visitors as well as members of the selected households. Fundamental information about the characteristics of every listed individual gathered included aspects such as age, education, sex, and the person's relationship to the household head. For people under the age of 18 years, their parents' survival status was determined. Additional questions were asked about children (people under 18 years of age) within households as well as where a parent had died. This was done for the support of both orphans and vulnerable children. The data on age of household members were useful in identifying men and women who could take part in the individual interviews.

I obtained permission to conduct my research after an official letter was sent to the Measure DHS's administrator for archival data. The letter contained my full name, the purpose of the study, the type of study to be conducted, and the country of interest. Further, approval from the Institutional Review Board of Walden University had to be obtained to conduct the study. The Measure DHS+ data were reputable, because they had been pretested on a much smaller sample of the Nigerian population in order to determine their adequacy and accuracy (Measure DHS/ICF Macro., 2008). The staff included highly

seasoned scientific investigators selected to conduct interviews with the Nigerian population. The performance of the staff was directly observed in the course of the interviews, including their pretest interview quality (Measure DHS/ICF Macro., 2008). In addition, Measure DHS, ORC Macro represented a great source of data because the data had been designed to yield indicators that were comparable to the data for nationally representative demographic health surveys (Measure DHS/ICF Macro., 2008).

This study was based on archival data from the NDHS 2013. I had seek out and then extract evidence from NDHS's (2013) original archival records. The records are held by the national body responsible for the wellbeing of Nigerians, especially in relation to their health conditions. The national body responsible for the NDHS study (2013) is the National Population Commission (NPC). Apart from being responsible for the NDHS (2013), the NPC is also the body that gathered the primary data and analyzed these data in order to generate outcomes and discussions. Nevertheless, the archival data was obtained from an online source, making this study a secondary study rather than primary research. This aspect of the data made this study a bit tedious and complex. The complexity contributed to time spent to identify, locate, and interpret the NDHS records. Such records were unique from any other DHS+ in Nigeria or from any other country in the world. I therefore had to employ much effort to obtain the specific data related to the study topic.

Instrumentation and Operationalization of Constructs

This study utilized a research instrument developed and designed by Scott (1987) mainly for measuring Macro International DHS+C. The main idea behind its design was to offer assistance to developing nations in the course of collecting data on health issues

such as family planning, fertility, maternal health, child health, as well as HIV. The basis for its development was an interest in ensuring the improvement of data collection, analysis, and evaluation. Its application also ensured that there was increased coordination and partnership in the collection of such data at both the country and international levels (Kembo, 2012). Consequently, there has been increased institutionalization regarding the collection of data among host countries.

The survey instrument in this regard consisted of core questionnaires that were all applicable in developing nations and could be supplemented within host countries with respect to their respective modules addressing specific issues of concern, especially HIV and AIDS. The survey instrument had been used in various countries to conduct sample surveys on populations, maternal health, and child health. This has been done with acceptable validity and reliability. In this case, *reliability* refers to the correlation existing between parallel test forms. Such reliability revolves around the possibility of an approximate result being achieved given that something was measured two times using the same instrument of measurements. The case of the NDHS study involved the researchers constructing data quality tables. The survey instrument's reliability was then assessed using the survey pretest on a smaller sample from the target population. This was specifically done to authenticate adequacy and accuracy as well as to ensure that the results would turn out to be satisfactory to the study investigators (Dillman et al., 2002).

A survey questionnaire was administered to gather quantitative data for NDHS (2013). In this regard, the researchers had to develop the required survey based on the questions, which were the most critical to the measures of the variables (Kembo, 2012). The most confounding variables in this study were type of residence, religion, literacy

level, age at first sexual encounter, months of abstinence, and exposure to the need for contraception.

Operationalization of Variables

Research subscales were developed in order to generate a successful assessment of the research questions. The knowledge in this case was useful in measuring the required awareness of HIV and AIDS. The same knowledge was used to initiate the right mechanism of transmission as well as prevention. The knowledge scales were in this regard computed from all the questions with all the selected variables in consideration. The variables for the respective questions were V-754BP, V-754CP, V-754WP, V-754CP, V-761, V-756, V-785, and V-823. This was done with the use of the male data set and female data set. Reverse coding was done on V-754JP, V-754WP, and V-823 because these three questions were worded negatively. In this regard, higher scores were used for higher HIV knowledge.

Various questions within the knowledge subscale were based on the following:

- V-754BP: Reduction of risk by avoiding sex where 1 = yes, 0 = no, and 8 = don't know
- V-754CP: Using condom, where 1 represents yes, 0 represents no, and 8 represents don't know
- V-754DP: Having one sex partner where 1 represents yes, 0 represents no, and 8 represents don't know
- V-754WP: Getting AIDS through sharing food with individuals who have AIDS, where 1 represents yes, 0 represents no, and 8 represents don't know

Sexual risk behavior subscaling was critical in assessing information regarding high-risk sexual behaviors. It was computed from the total questions, which included V-763A, V-763B, V-763C, V-833A, V-833B, V-833C, V-835A, V-835B, as well as V-835C. Reverse coding was done on the V-833A, V-833B, and V-833C questions due to negative wording. Similarly, high scores were assigned for high risks. Regarding attitudes, the questions utilized included V-851A, V-851B, V-851C, and V-851D. Other questions included V-851E, V-851F, V-851G. V-851H, V-851I, V-851J, V-851K, and V-8. In this regard, higher scores portrayed higher understanding in terms of marital obligations.

The questions used for the sexual risk behavior subscale include:

- V-763A: Any STI within the last 12 months, where 1 represents yes, 0 represents no, and 8 represents don't know
- V-763B: Genital sore within the last 12 months, where 1 represents yes, 0 represents no, and 8 represents don't know
- V-763C: Genital discharge within the last 12 months, where 1 represents yes, 0 represents no, and 8 represents don't know
- V-833A: Used condom always during sex with the last sexual partner, where 1 represents yes, 0 represents no, and 8 represents don't know
- 8-35A: Consumption of alcohol during the last time had sex, where 1 represents respondent represents drunk, 2 represents partner drunk, 3 represents both of us drunk, and 4 represents neither drunk, although consumed alcohol

In the case of the women's questionnaire, it was useful for collecting information about women ranging from 15 to 49 years of age. Key questions include:

Question 7: Men could put a rubber sheath on their penis right before sex, where yes is represented by 1 and no is represented by 2.

Qn 617: The last of six with this second or third person a condom used, where yes is represented by 1 and no is represented by 2.

Qn 625: Apart the person or the two people you have had sex with other persons within the last 12 months, where yes is represented by 1 and no is represented by 2.

Qn 626: Number of different people you had sex with within last 12 months.

For the men's questionnaire, it was administered to men ranging from 15 to 59 years of age. This was done in each second household under the NDHS (2013) sample. It was mainly used to obtain mostly the same data collected using the women's questionnaire. It was nevertheless shorter as questions on reproductive history as well as maternal and children health were not included.

In the case of religious beliefs, coding was done as follows: 0=not Islamic, 1=Islamic. The religious beliefs were derived from question V-130 for the females and MV-130 for males. Religious beliefs were taken as a dichotomous variable. Location variable was specifically obtained from MV-025 and V-025. Coding location was done as follow: 0=urban, 1=rural.

Data Analysis Plan

In this study, the normality of data was assessed specifically by viewing a q-to-q plot of residuals from the regression of data. Normality in this case is set to be achieved only given that most of the points on the scatterplot fell on the 45-degree line (Stevens, 2009). Normality test will also be used in determining whether the data set are well-modeled using a normal distribution. It will help in determining whether the random variables that underlay the data set was normally distributed (Stevens, 2009). The assessment of homoscedasticity on the other hand was done through viewing the residuals scatterplot. In this regard, it was considered that homoscedasticity would specifically be attained when the residuals were distributed in a rectangular pattern (Stevens, 2009). In case such assumptions will not be met, the use of Spearman correlations is the best option (Stevens, 2009). In this case, a computer program is critical.

The data was entered into a SPSS program, version 20.0. In this regard, procedures for data cleaning as well as screening was employed with a view of checking and deleting duplicate entries of the data. This was done in order to ensure that the data is meaningful. At the same time, descriptive statistics are critical for the description of the research variables, alongside the study demographics (Okonta & Oseji, 2006). In the case of continuous data, the calculation of means and standard deviation was done. For any nominal data, frequencies and percentages was calculated. To do all these, the research questions and the associated research hypotheses are stated as shown below.

Research Question 1

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs and the sexual risk behaviors (unprotected sexual intercourse) of people living in urban versus rural regions in Nigeria?

H103: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

H1a3: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

The assessment of Research Question 1 was done by conducting a multiple linear regression analysis. This was done to generate an assessment of whether knowledge, religious beliefs, attitudes, as well as type of residence are related to the risk behaviors exhibited by respondents. A multiple linear regression was done in the case where the study objective is to assess whether a set of interval variables can forecast interval level dependent variables. In such regard, HIV knowledge and attitudes was taken as interval-level dependent variables. On the other hand, religious beliefs and the type of residence was the dichotomous variables.

Research Question 2

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs and the sexual risk behaviors of people living in urban regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

Multiple linear regressions was also conducted for the assessment of Research Question 2. This is meant to assess whether attitudes, knowledge of HIV, and religious beliefs predicted the sexual behaviors of the people living in urban areas. In this regard, knowledge of HIV and attitude was the continuous variables. On the other hand, Religious belief was taken as a dichotomous variable. In this case, coding is done to distinguish between Islamic religion and the not Islamic religion. For instance, 0 values are assigned for the not Islamic variable and 1 value are assigned for the Islamic variable. In the same case, knowledge of HIV, attitude, and religious beliefs was taken as the independent variables in the analysis. Similarly, the determination of normality is essential. This was done through the viewing of the residual q-to-q plot from the regression. As mentioned earlier, normality was achieved when most of the points fell on the 45-degree line within the scatter diagram. On the other hand, the assessment of homoscedasticity was done through the viewing of a residual scatterplot, but this assumption would only be achieved when the residuals are rectangular distributed. Since this assumption may not be met through this option, a Spearman correlation could be conducted using an SPSS computer program.

Research Question 3

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs and the risky sexual behaviors of people living in rural regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria

The assessment of Research Question 3 was similarly done using a multiple linear regression model. The multiple linear regression models was directed to the assessment of whether attitudes, knowledge of HIV, and religious beliefs, among the rural resident's participants, predicted the sexual risk behavior being studied as the dependent variable. Regarding the types of variable, HIV knowledge and attitudes was taken as the continuous variables, while religious was taken as the dichotomous variable. The determination of normality is again essential in this analysis. It was done through the viewing of the residual q-to-q plot from the regression. As mentioned earlier, normality is to be achieved when most of the points fell on the 45-degree line within the scatter diagram. On the other hand, the assessment of homoscedasticity was done through the viewing of a residual scatterplot, but this assumption would only be achieved when the residuals are rectangular distributed. Since this assumption may be not met through this option, the Spearman correlation was conducted using an SPSS computer program.

Multiple Regression

A number of bivariate observations will exist in this study, specifically within the analysis. Consequently, multiple regressions or multivariate comparisons are required for assessing the joint effect of the influencing variables on the influenced variable. This is mainly done with the aim of reducing the possibility of Type 1 error or even the probability of having the null rejected when; in essence, it should not have been rejected. The suggestion in this case is that a certain relationship would exist given that it happens by chance only according to Stevens (2009). The multiple regressions was specifically initiated and conducted in order to assess whether the independent variables have actually predicted the influenced/dependent variable. Typically, conducting multiple regressions is considered appropriate in the case where the research goals are to assess the relationship extent among the dichotomous or even the interval and ratio predictor variables. This has to be on an interval and ratio criterion variable. In this regard, the multiple regression model is directed by the main effect model of $Y = b_0 + b_1X_1 + b_2X_2 + e$ (Tabachnick & Fidell, 2006).

Where:

Y = Response Variable

b0 = Constant

b1 = *the initial predictor coefficient*

X = *Predictor Variable*

E = *Residual Error*

In this type of regression, the enter method was applied. In this regard, all the influencing/predictor variables are entered into the model simultaneously. This standard

multiple regressions are considered the most appropriate entry method because no sufficient theory consulted as suggesting another better method. The variables was evaluated on the basis of what every variable contributed to the dependent variable prediction, which is completely different from the provided predictability by all the other predictors according to Tabachnick and Fidell (2006). An F test was conducted to assess the possibility of the independent variables to predict the influenced variable. Besides, R-Squared analysis of the multiple correlation coefficients was conducted to determine the level of variation in the influence/dependent variable, which could be accounted for through the independent variables. A t test was done to establish the level of significance for each of the predictor variables and the beta coefficients. This is critical in determining the prediction extent for all the independent variables. In this regard, for the predictors, a change in one unit in each of the predictors, the dependent variable decreased or increased by the same number of the unstandardized beta coefficients. The covariates to be controlled are gender, sexual partners over the past years, age at first sexual encounter, socioeconomic status and literacy level.

Threat to Validity

Threat to External Validity

External validity in this regard refers to generalized inferences validity in a research. The external validity determines the level of generalization of study results on the general population. Regarding this study, unreliable measures were found to be the only factor considered as the threat to the constructs and statistical validity in this study (Trochim & Donnelly, 2008). Nevertheless, the threat was later corrected during the survey, specifically by the NDHS (2013) researchers. In this case, the researchers had

decided to choose measures with prior evidence in order to ensure their reliability in study of the entire population. The threat to the extent of measurement in this study could limit the generalization of the study results (Baskerville, 1991). There was no threat to aspects like testing reactivity, interaction effects of selection, or even experimental variables, specificity of variables, reactive effects of experimental arrangements, as well as multiple-treatment interference, as appropriate to this study. Such aspects were successfully integrated in the study and there was thus no need to employ any effort to rectify the threats.

Threat to Internal Validity

Internal validity in this regard reflects the level at which the causal conclusion is warranted in respect to this study. The warrant in this case could be constituted by level at which the study will minimize systematic errors or bias (Trochim & Donnelly, 2008). There were no evidenced threats to internal validity concerning aspects like history, statistical regression, maturation, experimental mortality, as well as the selection-maturation interaction (Adèr, Mellenbergh & Hand, 2008).

Ethical Procedures

The participation of individuals in the study was solely voluntary. There was no identification of the data, which made it anonymous before it was obtained. Confidentiality was also an ethical consideration. The aspect of confidentiality was ensured in both the rural and urban populations. In this regard, aggregate results were maintained according to the National Population Commission/ICF Macro (2013).

Regarding the sample selection, a stratified two-cluster design was used. A specific number of households were selected to bring out the required target for each of

the 37 states. Only the potential participants were notified about the risks and benefits that were possible for the study. The participants were also notified about the confidentiality of the collected data. In this case, their names and signatures could not be made to appear in the final survey document (National Population Commission/ICF Macro, 2013). It was also important to brief the participants on data dissemination as well as who would access the data. They were also notified that the final document containing the survey data cannot be destroyed. The document would instead be stored confidentially. Registration is thus required for anyone who wished to access the data and that anyone wishing to access the data would require a written approval. Lastly, the participants were advised that discontinuation from the study was allowed at any given time and that they were free to leave any question unanswered. Prior to retrieving and analyzing the needed data I will receive approval from the Walden IRB.

Summary

This study is cross-sectional in aspect and is based on the pre-existing NDHS (2013) archived data. A cross-sectional study is preferred because of resource limitation to conduct primary research. Besides, this type of study allowed for a quick data gathering and at low cost. At the same time, the NDHS 2013 data was found to be the latest and the most promising survey, which could provide information about health as well as population dynamics within Nigeria.

The study utilized data from 33006 participants from various households based on the NDHS 2013 data. The participants were identified through the two-stage cluster design. Two main questionnaires were considered for the NDHS (2013) survey/study. These included the Men's Questionnaire and the Women's Questionnaire. The use of

different questionnaires was meant to specify some aspects that were specific to the male and female populations respectively. Nevertheless, the Women's questionnaires were more detailed and longer than the Men's Questionnaires due to the additional section of women's reproductive history. However, a household questionnaire was also incorporated to collect general information about households.

Attitudes, HIV knowledge, as well as religious beliefs was the independent variables used in this study. Sexual risk behavior on the other hand was the dependent variable. The study will also focus on three research subscales, which were created for assessing the three research questions (Adèr et al., 2008). Regarding the data analysis, SPSS 20.0 was used to conduct the multiple linear regressions. The regression was done to find out whether HIV knowledge, attitudes, and religious beliefs, as well as location are related to risk behavior. In this chapter, the study's methodological description is presented. Other aspects described in the chapter include the study design, the research instrument, materials, and collection of data, statistical methods, reliability, and threats to validity. The NDHS 2013 questionnaire in this case was used in answering the research questions, as also described in the chapter. The next chapter (Chapter 4) will entail the data analysis and reporting.

Chapter 4: Data Analysis and Results

Introduction

The purpose of this chapter is to establish whether there existed a relationship between religious beliefs, attitudes, knowledge, and sexual behaviors in the urban versus rural regions of Nigeria. I base this on the research questions and their respective hypotheses, which also guided the data analysis process. They were as follows:

Research Question 1

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors (unprotected sexual intercourse) of people living in urban versus rural regions in Nigeria?

I selected the data in such a way that all the variables are represented in the study hypotheses. The study hypotheses included:

H103: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

H1a3: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

Research Question 2

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors of people living in urban regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

Research Question 3

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the risky sexual behaviors of people living in rural regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

The chapter is broken down into several sections, including data collection, treatment and intervention, results, and summary. The data collection section provides in-depth information about the time taken to collect the study data. The section also provides information about possible discrepancies from the data collection process and the study design. I have also presented a report of the demographic characteristics of the sample in the data collection section under this chapter, as well as how the sample represents the general population of interest. The section further provides the univariate analysis results that justify covariates' inclusion in the research model. The other section

under this chapter concerns treatment and intervention fidelity and describes the possibility of achieving the study goals or plans and any challenges faced during the study. The most important section is the results section. The report section provides the descriptive statistics that properly characterize the samples. It provides the summary of the study data though statistical results like mean, standard deviation, normality, and other important statistical measures. I have also analyzed the statistical assumptions in this section. In the results section, I report statistical findings organized by the research questions and hypotheses. This analysis comes with exact statistics and probability values. The chapter then ends with a summary of the key points presented in the entire chapter and the way in which they relate to other chapters. I also summarize answers to all the research questions in this chapter.

Data Collection

I only used secondary data collection techniques to collect the relevant data from the DHS 2013. I chose only relevant data based on the selected covariates. The key objective in using this technique was to select only the covariates related to the variables of study in finding the correlation between risk behaviors among members of rural and urban populations constituting the targeted population (Ford, 2012).

I carefully selected data from the DHS 2013 to suit all the variables of study depicted in the research questions and their respective study hypotheses. The NDHS (2013) was specifically fielded between June and October 2013. In total, 40,680 households were interviewed and included 39,796 women whose ages ranged between 15 and 49 years, as well as 18,151 men whose ages ranged between 15 and 59 years. The response rate was 99%for households, 95.4% for men, and 97.7% for women. From these

statistics, there seems to be no significant difference between rural and urban areas in terms of the response rate (NDSH, 2013). A sample that represented the entire national population was selected for this study through a stratified design of a two-stage cluster. This cluster design resulted in a final cluster of 904 with 532 in the rural areas and 372 in the urban areas, which was the study sample. I obtained the data from three questionnaires used for the NDSH (2013): the household questionnaire, women's questionnaire, and men's questionnaire. From these questionnaires, it was possible to gather data for the sexual risk behaviors as the independent variables as measured by the NDHS 2013 sexual risk behaviors scale. Other important covariates representing the study variables included socioeconomic status, type of residence, religion, educational level, gender, age, and marital status.

Researchers structured the three questionnaires to reflect all health issues found to be relevant to Nigeria. The questionnaires focused on all men and women of the selected age category and permanently residing in Nigeria. They also included visitors found in the specific household during the interview.

The Sample Descriptive and Demographic Characteristics

I obtained the data from the NDSH (2013), with data about males and females being used in the analysis. Most of these data came from female participants (38,868; 69.2%), with most of the participants being from rural areas of Nigeria (33,368; 59.8%). The largest religion among those interviewed was Islam, with 26,712 (50.1%). Christian was the second largest religion, with 19,815 (37.2%), and then Catholic, with 5,997 (11.3%).

Table 2

Participant Demographics Frequencies and Percentages

Demographic		*N*	Interviewed	%	Response rate (%)
Gender	Male	18,229	17,317	30.8	95.2
	Female	39,902	38,868	69.2	97.7
Location	Urban	23,525	22,388	40.2	94.7
	Rural	34,606	33,368	59.8	96.0
Religious belief	Catholic	6,330	5,997	11.3	94.7
	Other Christian	20,103	19,815	37.2	98.6
	Islam	29,056	26,712	50.1	91.3
	Traditionalist	520	509	1.0	97.9
	Other	271	243	0.5	89.7

Note. From "National Population Commission [Nigeria] and ICF Macro," 2013, in *Nigeria Demographic and Health Survey 2013.* Abuja, Nigeria: National Population Commission and ICF Macro.

Research Subscales

To assess the study questions, I formulated three research subscales. These subscales included a knowledge subscale, sexual risk behaviors, and attitudes. I used the sum of questions V754BP, V754CP, V754DP, V754WP, V756, V761, V785, and V823 to compute the knowledge subscale. Reverse coding was crucial on questions that were negatively worded: V754JP, V754WP, and V823. I used the sum of questions V763A, V763B, V763C, V833A, V833B, V833C, V835A, V835B, and V835C to compute sexual risk behaviors. In this case, I did reverse coding on questions V833A, V833B, and

V833C because they were worded negatively. I used the sum of the V851A, V851B, V851C, V851D, V851E, V851F, V851G, V851H, V851I, V851J, V851K, and V851L questions to compose attitudes.

From the computations, I then examined the scores to establish outliers. According to Stevens (2009), outliers are standardized values that are greater than a variance of ±3.29. The knowledge score consisted of 1,313 outliers, but I removed them. In the attitude score, I removed 628 outliers; in the sexual risk behaviors, I removed 789 outliers. The scores for knowledge ranged between 0 and 40, with an average of 9.83 and a standard deviation of 6.97. Higher scores represented higher knowledge; thus, an average of 9.83 implied that the respondents had relatively low knowledge. Attitude scores ranged between 0 and 61 and averaged 14.34 and a standard deviation of 13.34, with higher scores representing more positive attitudes, implying that the respondents mostly depicted low levels of positive attitude. For sexual risk behavior, the scores ranged between 0 and 3, with 3 being the highest value for risk. . The average of the score in this case was 0.13 and a standard deviation of 0.48, representing very low risk scores for this population.

Table 3

The Mean and SD for Attitude, Knowledge and Sexual Risk Behavior

Scores	Mean	*SD*
Knowledge	9.83	6.97
Attitude	14.34	13.34
Sexual risk behavior	0.13	0.48

Results

Research Question 1

I first did data analysis on the first research question, which was the following: Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors (unprotected sexual intercourse) of people living in urban versus rural regions in Nigeria?

H103: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

H1a3: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria.

I did the assessment of Research Question 1 using a multiple linear regression. I carried out the regression analysis to assess whether attitudes, knowledge, religious beliefs, and location predicted sexual risk behavior. I first assumed that normality would affect the results, and it was thus assessed using a p-p scatterplot to establish whether all points I plotted in the quantile-quantile plot fell approximately on a straight line. This requirement was not achievable, and hence there was no normality of the data. I tested the risk, knowledge, and attitude as interval variables for skewness and found that risk portrayed the highest level of positive skewness and had to be transformed. I thus transformed the variable through square root, as suggested by Tabachnick and Fidell (2006). A rerun was tried on the multiple regression to check whether normality could improve, which failed after the rerun. I had to use the untransformed risk variable as the

dependent variable because there was zero improvement and the sample size was large. However, I considered it important to be cautious during the final interpretation of the study results.

The linear regression results were significant, F (4, 56,185) = 21.16, $p < .001$, $R2$ = 0.00. This suggested that that knowledge, attitude, location, and religion predicted sexual risk behavior. An $R2$ of 0.00, however, suggested that the variables did not account for a significant variance percentage in sexual risk behavior. Attitude was found to be a significant predictor, with B = -0.001 and $p < 0.001$. This suggested that every one-unit increase in attitude leads to a decrease in sexual risk behavior by 0.1%. Another significant predictor was religion, with B = -0.030, $p < 0.001$. The sexual risk behavior among Muslims was lower by 0.31% units than among non-Muslim participants. However, knowledge with B = -0.001 and p = 0.087, and location with B =0.003 and p = 0.431 were found not to be significant predictors of sexual risk behavior among Nigerians. The results of the regression model were significant; hence, the null hypothesis (H103) that HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban versus rural people in Nigeria was partially rejected in favor of the alternative hypotheses. The regression model therefore confirmed that HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) irrespective of location type (urban or rural) in Nigeria.

The results of the multiple regressions were tabulated as follows:

Table 4

Multiple Linear Regression With Attitude, Knowledge, Location, and Religion Predicting Sexual Risk Behavior

Source	*B*	*SE B*	*β*	*T*	*p*
Knowledge	-0.001	0.000	-0.009	-1.86	0.87
Attitude	-0.001	0.000	-0.021	-4.35	0.001
Religion (non-Islamic vs. Islamic)	-0.031	0.004	-0.036	-6.84	0.001
Location (urban vs. rural)	-0.003	0.005	0.005	0.78	0.431

Research Question 2

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors of people living in urban regions in Nigeria?

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria.

I did the assessment of Research Question 2 using a multiple linear regression. The regression analysis was important to assess whether attitudes, knowledge, religious beliefs, and location predicted risky sexual behavior among people in the urban areas of Nigeria. It was first assumed that normality would affect the results, and normality was thus assessed using a p-p scatterplot as well as residual plots. There was some violation in normality and homoscedasticity. Because the assumptions were violated, Spearman

correlation and point biserial correlation had to be conducted. Spearman rho correlations were done for attitude and knowledge as independent variables. The point biserial correlation was done for religious beliefs.

From the Spearman correlations, it was depicted that a relationship existed between knowledge and sexual risk behaviors where $r_s = 0.04$ and $p < 0.001$. This indicated that when participants' knowledge increased, their sexual risk behavior also increased. The results also depicted a significant relationship between participants' attitudes and their sexual risk behavior with $r_s = -0.03$ and $p < 0.001$. These results indicated that whenever participants' attitudes became more positive, sexual risk behavior tended to decrease. The results also showed a significant relationship between religious beliefs of people and their sexual risk behavior with $r_{pb} = -0.04$ and $p < 0.001$. This indicated that Islamic participants had lower scores on their risk behaviors compared to non-Islamic participants. The study used the guidelines of Cohen (1988) in assessing the relationships' strength. In this assessment, coefficients between 0.10 and 0.29 represented a small association, whereas coefficients between 0.30 and 0.49 depicted a medium association. The coefficients above 0.50, on the other hand, represented a minimal relationship. The significant relationships had a medium to weak relationship. This implied that the null hypothesis (H101) that HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria was rejected. The alternative hypothesis (H1a2) that HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of urban people in Nigeria was accepted.

The correlation results are presented in a table as shown below.

Table 5

Correlations Between Knowledge, Religious Beliefs, and Attitude With Sexual Risk Behavior for the Urban Participants

	Sexual risk behavior (r_s)
Knowledge	0.30
Attitude	-0.50
Religious beliefs	-0.40

From the correlation results, the correlation between knowledge and sexual risk behavior is the only positive correlation since it has a positive value. All the correlations are significant.

Research Question 3

Data analysis was also done on the third research question to test the significance of each of its two hypotheses. The research question was:

Is there any existing relationship between HIV knowledge, attitudes, religious beliefs and the risky sexual behaviors of people living in rural regions in Nigeria?

The accompanying research hypotheses included:

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to the risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

A multiple linear regression was done to assess the Research Question 3. The assessment was done to determine the existing relationship between religious beliefs, attitudes, and knowledge of participants from rural regions of Nigeria with their risk behaviors. It was first assumed that normality would affect the results and it was thus assessed using a p-p scatterplot as well as residual plots. After the normality assessment, it was depicted that there was some violation in normality and homoscedasticity. Since the assumptions were violated, spearman correlation and point biserial correlation had to be conducted. Spearman rho correlations were done for attitude and knowledge as independent variables. The point biserial correlation on the other hand was done for religious beliefs.

From the Spearman correlations, it was depicted that a relationship existed between knowledge and sexual risk behaviours where $rs = 0.04$ and $p < 0.567$. Small r_s value suggested that when knowledge of people increased their sexual risk behavior was not affected. The results depicted a significant relationship between participant's attitudes and their sexual risk behavior with $rs = -0.03$ and $p < 0.001$. These results suggested that whenever participant's attitudes became more positive, sexual risk behavior tended to decrease. The results also showed a significant relationship between religious beliefs of people and their sexual risk behavior with $r_{pb} = -0.06$, $p < 0.001$. This suggested that Islamic participants portrayed lower scores on their risk behaviors compared to the non-Islamic participants. The study used the guidelines of Cohen (1988) in assessing the relationships' strength. In this assessment, coefficients between 0.10 and 0.29 represented a small association while coefficients between 0.30 and 0.49 depicted a medium association. The coefficients above 0.50, on the other hand, represented a great

relationship. The significant relationships were found to have very weak strength. Due to this reason, the alternative hypothesis (H1a2), that HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria, was rejected. The null hypothesis could not be rejected.

The correlation results were presented in a table as shown below.

Table 6

Results of Correlations Between Knowledge, Religion Beliefs, and Attitude With Sexual Risk Behavior for Urban Participants

	Sexual risk behavior (r_s)
Knowledge	0.04
Attitude	-0.03
Religious beliefs	-0.06

Note. NB: The correlation values are all significant to the study.

Summary

In Chapter 4, the results of data analysis done on NDHS (2013) were presented to make an assessment on whether relationships existed between religious beliefs, knowledge of HIV, attitudes and sexual risk among people living in urban vs. rural areas of Nigeria. From the analysis, the key findings that religious beliefs, attitudes, and location predicted the sexual risk behaviors of people living in both rural and urban areas of Nigeria. In the urban region of the country, there was a significant relationship between the knowledge of participants and their sexual risk behaviors whereby r_s=0.04 and p<0.001. There was also a significant relationship between attitude and sexual risk behavior with r_s=0.03 and p<0.001. Similarly, religious beliefs of participants and their

sexual risk behavior depicted a significant relationship with r_{pb}=-0.04 and p<0.001. Conversely, there was no significant relationship found to exist between knowledge and participant's sexual risk behaviors in the rural regions since rs=.04 and p=.567. However, significant relationships existed between the attitudes of people and the sexual risk behavior with r_s=-0.03 and p<0.001. The relationship between participant's religious beliefs and their sexual risk behavior was significant with r_{pb}=-0.04 and p<0.001. During the analysis, skewness was discovered and thus caution is advised when interpreting the final results in the two regions of Nigeria.

Chapter 5 will involve a discussion of the results and interpretation of the study findings obtained in chapter 4. Other key areas of focus in chapter 5 include stating limitations of the study, its implication for social change, as well as any recommendations for future research.

Chapter 5: Discussion

Introduction

This study contains an examination of whether there is a relationship between religious beliefs, attitudes, HIV knowledge, and sexual risk behaviours among urban versus rural residents in Nigeria based on data from NDHS 2013. Because of the existing burden of HIV in Nigeria, these study results was highly significant with potential social, economic, and health impact to society. There is a lack of existing research on how religious beliefs, attitudes, and knowledge affect sexual risk behaviors in the rural versus urban areas of Nigeria (Slonim-Nevo & Mukaka, 2005). The government could design health care strategies using clear knowledge of these variables, which would then help stem HIV virus transmission in the country.

A quantitative research method was crucial for this study's success, including tests of hypotheses using the survey data. A cross-sectional design was reliable for analyzing the preexisting data (Raz & Lindenberger, 2011). Factors such as time constraints, resource limitations, and the need for rapid gathering of data contributed to the choice of the cross-sectional study.

The analysis indicated that a significant relationship exists between attitudes, knowledge, religious beliefs, and sexual risk behavior among residents from the urban regions of Nigeria. There was also a significant relationship between attitudes, religious beliefs, and sexual risk behavior in the rural regions in Nigeria. However, there was no significant relationship between knowledge of HIV and sexual risk behavior among people living in the rural regions of Nigeria.

Interpretation of Findings

Among study participants, there were more females than males, and more of the respondents were from rural regions as compared to urban regions. The participants were diverse in in terms of religious faith. The largest proportion of the participants was Christian, followed by Islamic, then traditionist and other religions.

Social cognitive theory (Jessor & Jessor, 1977) and the theory of problem behavior by Jessor and Jessor (1977) served as the basis of the discussion. Researchers and sexuality educators have previously used such theories (Jessor & Jessor, 1977). I analyzed the research questions separately as follows:

Research Question 1

Is there any existing relationship among HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors (unprotected sexual intercourse) of people living in urban versus rural regions in Nigeria?

For this research question, The linear regression results were significant, F (4, 56,185) = 21.16, $p < .001$, $R2 = 0.00$. This suggested that that knowledge, attitude, location, and religion predicted sexual risk behavior among Nigerians. Essentially, attitudes, as one of the study variables, significantly predicted sexual risk behavior whereby as positive attitudes toward sexual activities increased, there was a general decrease in sexual risk behaviors. Such findings are consistent with the study findings by Carey et al. (2011), who established some positive attitudes and perceptions as being associated with a higher level of condom use during sexual intercourse. In this regard, the sexual risk behavior in question falls under unprotected sexual activities. Positive

attitudes in this case led to a reduction in risky sexual behaviors among Nigerians and the promotion of protective sexual encounters such as the use of condoms.

Religious beliefs were significant in predicting sexual risk behaviors. It was found that that sexual risk behavior among the Islamic residents was much lower than that of other religious groups. These results are consistent with Gyimah et al. (2010), who previously established that Islamic beliefs are associated with a lower risk of engaging in sexual risk behavior. The findings, however, failed to align with other studies such as that of Stulhofer et al. (2011), who stipulated that religiosity did not affect condom usage. The results did not align with the results stated by Nodern et al. (2010), who previously established that religious beliefs had only a limited influence on sexual behaviors related to HIV. The contrast probably exists because of the Sunni Muslim population in Nigeria, consisting of people known to be ultra-religious. These people are strictly against sex outside marriage, according to Gyimal et al. (2010). The results thus could stimulate further research on the impact of differing religious sects on the dynamics of HIV transmission and sexual risk behaviors. The differences between various religious groups included in the study by Gyimal et al. (2010) and in the study by Stulhofer (2011) are such that that Stulhofer et al. never classified religions into various faiths while Gyimal did. In this case, there would be no specific way of establishing whether Islamic believers were included in the study or not. Nodern et al. (2010) included Islamic believers in their study but had results in opposition to those of Gyimal and Stulhofer. The aspect of sample size difference could be another contributing factor to the realized difference.

I highlighted the importance of making use of social cognitive theory in understanding the factors associated with sexual risk behavior in this study. Social

cognitive theory outlines the interaction of beliefs of individuals and influences of the environment on such beliefs. In this regard, the influence of religious groups with which the study participants were affiliated contributed to the significant findings. People were influenced by their respective religious beliefs in terms of the way they engage in risky sexual behaviors. Knowledge of HIV had a direct effect on sexual risk behaviours among Nigerians. As knowledge of HIV increased, people engaged in more sexual risk behaviors, which explains why the Nigerians living in urban areas increasingly engaged in unsafe sexual behaviors despite increasing knowledge about HIV. One possible reason behind this finding is that the knowledge of HIV includes understanding of the disease and how to manage it, and people may thus fail to adjust for safety in terms of their view toward engaging in risky sexual behaviors owing to this new knowledge. People without adequate knowledge about HIV perhaps perceive it as a very fatal disease and thus would avoid any risky sexual behaviors that are likely to expose them to a possible death sentence.

Location, however, had no significant relationship to sexual risk behavior, whereby risk behavior was found to be equally distributed in urban areas and rural areas. This implies that all people living in Nigeria are subject to risky sexual behaviors regardless of their locations, rural or urban, in the country. People living in the rural areas of Nigeria exhibit the same sexual risk behaviors as people living in the urban areas of the country.

Research Question 2

Is there any existing relationship among HIV knowledge, attitudes, religious beliefs, and the sexual risk behaviors of people living in urban regions in Nigeria?

From this research question, using the Spearman correlations showed that a relationship existed between knowledge and sexual risk behaviours where $r_s = 0.04$ and $p < 0.001$. This indicated that when participants' knowledge increased, their sexual risk behavior also increased. The results also depicted a significant relationship between participants' attitudes and their sexual risk behavior with $r_s = -0.03$ and $p < 0.001$. These results indicated that whenever participants' attitudes became more positive, sexual risk behavior tended to decrease. These results contrasted with the results of a study by Atiola et al. (2010) on long-distance truck drivers. Atiola et al. established that positive attitudes about the use of condoms had no impact on extramarital sex.

In this study, I did not test other risk behaviors such extramarital sex, but I combined sexual risk scores that encompassed unprotected sex, age at first sexual encounter, months of abstinence, sex with multiple partners, and exposure to the need for contraception. In the study by Atiola et al. (2010), 70.7% of the participants admitted to having sex outside their marriages. This difference could be associated with variation in sample size or sampling bias. The study by Atiola et al. (2010) relied on a larger sample size, but in this study I used a sample that represented the whole of Nigeria while the study by Atiola et al. was only based on the southern part of Nigeria.

A significant relationship existed between sexual risk behaviors and religious beliefs. Islamic participants exhibited lower sexual risk behavior scores as compared to non-Islamic participants. My findings were consistent with a study by Gyimah et al. (2010) in which Muslims showed 26% lower risk of engaging in sexual risk behaviors compared to Christians. Knowledge was significantly associated with sexual risk behavior, such that as as knowledge of HIV increased, sexual risk behaviors increased.

This finding contrasted with a study by Sutton et al. (2010) in which knowledge of HIV increased condom use and decreased the number of sex partners. The difference in this case could also be due to the use of samples of different characteristics in the two studies, such as sample subjects from all of Nigeria for this study and respondents from a specific region in the study by Atiola et al. The difference with the study by Sutton et al. (2010) could be due to a successful campaign against multiple sex partners and the use of condoms among members of the population studied by Sutton et al.

Research Question 3

Is there any existing relationship among HIV knowledge, attitudes, religious beliefs, and the risky sexual behaviors of people living in rural regions in Nigeria? The accompanying research hypotheses include:

H101: HIV knowledge, religious beliefs, and attitudes toward sex are not significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

H1a2: HIV knowledge, religious beliefs, and attitudes toward sex are significantly related to risky sexual behavior (unprotected sexual intercourse) of rural people in Nigeria.

From this research question and the respective hypotheses, the Spearman correlations showed that a relationship existed between knowledge and sexual risk behaviours where $rs = 0.04$ and $p < 0.567$. A small r_s value suggested that when knowledge increased, sexual risk behavior was not affected. The results depicted a significant relationship between participants' attitudes and their sexual risk behavior with $rs = -0.03$ and $p < 0.001$. These results showed that whenever participants' attitudes became more positive,

sexual risk behavior tended to decrease. The results also showed a significant relationship between religious beliefs of people and their sexual risk behavior with $r_{pb} = -0.06$, $p < 0.001$. The previous study by Atiola et al. (2010) was not supported by this study because Atiola et al. found that a positive attitude had no effect on extramarital sex whereas my study indicated that a positive attitude discouraged people's engagement with multiple sex partners. However, I did not test for the specific risk behavior of extramarital sex in this study; rather, I examined a combination of risk scores that encompassed the same variables instead of individual scores to test whether the relationship existed. The difference was mainly associated with a sample size difference and the characteristics of the sample, whereby my study used a larger sample representing the entire country while the study by Atiola et al. was larger but did not represent the entire country.

A significant relationship existed between sexual risk behaviors and religious beliefs among people living in rural regions of Nigeria. Islamic participants had lower sexual risk behavior scores than the non-Islamic participants. This finding acquired some support from the study by Gyimah et al. (2010), which portrayed that Muslims had 26% lower chances of engaging in sexual risk behaviors than Christians. The difference in these findings could have been because of a predominantly Sunni Muslim population within Nigerian society. Sunni Muslims are very religious, such that they forbid extramarital sexual relationships. Further studies could be conducted to determine the influence of religious sects or even subpopulations of religious groups regarding sexual risk behaviours and the associated impact on the transmission dynamics of HIV in Nigeria.

In this study, no statistically significant relationship existed between knowledge of HIV and sexual risk behaviors in rural Nigeria. The results are consistent with those of a study by Durojaiye (2009), which examined the impact of variables including perception, knowledge, and the behaviours of youth on HIV in Nigeria. Durojaiye's study established that HIV knowledge was high among study participants; the difference between his study and mine is that my study findings were for the rural and urban regions of Nigeria, whereas he based his study only on the urban regions of Nigeria. His study tested youths from 16 to 35 years of age, whereas my study focused on the ages of 15 to 59 years. This difference resulted in an age group overlap because the subjects were restricted to a smaller age range in the study by Durojaiye (2009). This implies that the knowledge of HIV variable was not adequately examined in the Durojaiye study.

The results of this study support the use of social cognitive theory, which deals with environmental influences on individual beliefs. In this regard, the social influence of religious groups and attitudes toward sexual activities affected the sexual behavior of participants.

Study Limitations

This work contributes to the scholarly literature in that it fills a gap regarding the impact of attitude, knowledge of HIV, and religious beliefs in the urban versus rural areas of Nigeria. This study, however, had a number of limitations, with the first being the use of secondary data. Secondary data may have inaccuracies and errors that limit the external validity of the study. The findings are applicable to the study participants and less applicable to the rural and urban regions of Nigeria. Another limitation was that the respondents had been recruited using nonrandomized convenience sampling, which may

have resulted in biased sampling and hence caused limitations on its generalizability beyond the surveyed population. The final limitation was that the questionnaires used in the study were in English. This was not adequately applicable in a community consisting of more than 500 languages. The study thus had some language barriers, especially for the non-English-speaking respondents. This aspect limited the study's generalizability. The study was also not reliable in certain instances because it did show full representation of the targeted population. Besides, it was uncertain whether the information given by the respondents was completely accurate, especially in relation to sensitive personal information. This aspect raised some doubts about its validity.

Recommendations

The recommendations are based on my results, the study's weaknesses and limitations, as well as the reviewed literature. HIV is still a public healthcare challenge in Nigeria and accounts for significant morbidity and mortality in the country. The forces driving HIV transmission in the country, as in many Sub-Saharan countries, include high-risk behaviors among vulnerable groups, according to Onyeneho (2009). This issue has created a significant burden on the country's healthcare system, which is already fragile (Onyeneho, 2009). Prevention of HIV infection is still a key strategy in fighting against the disease and, therefore, it is highly recommended that the government enhance the accessibility of condoms in both rural and urban regions of Nigeria. If possible, agencies should make condoms freely available to all Nigerians to minimize the risks associated with unprotected sexual behaviors. This would, however, be possible through the right publicity in an effort to encourage people to use protection during sexual intercourse with all partners. Additionally, the government should initiate a media campaign to

discourage extramarital sex and encourage individuals to have no more than one sex partner. This will cut down on risky sexual behaviors and hence the spread of HIV. This will also revert the fact that those with high HIV knowledge are likely to engage in more risk behaviors. It will also enhance the development of a negative attitude toward sexual risk behaviors such as the practice of unprotected sex and having multiple sex partners.

Implications

This study has multiple implications for Nigerians and their country as a whole. The social, economic, and human burden of the HIV problem in the country is unique, and thus the study results have direct implications for the current efforts to stem the tide of HIV in Nigeria. The study findings are useful in adopting several prevention measures that may address the HIV epidemic in the country. Positive attitudes toward safer sexual behaviors, if encouraged, may reduce the prevalence of sexual risk behaviors among Nigerians. The study findings could also contribute to the promotion of social change after being published in sex education journals and communicated through local media and the country's ministry of health, whereby people will acquire useful ideas on safe sexual behaviors. This may help local governments and the state government develop programs that, if implemented, would improve the lives of Nigerians in all of the country's regions. The results could also promote positive social change through decreasing HIV infection incidence in persons between 15 and 59 years of age, who are the most sexually active and hence at highest risk of contracting the disease.

Conclusion

HIV affects a significant percentage of the general population of Nigeria. The disease has now become an economic, social, and health problem and has significantly

reversed the democratic gains in the country for the past few decades (Ajdukovic, Ajdukovic, and Prislin, 2001). The HIV virus is further spreading swiftly throughout Sub-Saharan Africa; an estimated 1.3 million children have lost their parents to HIV and AIDS (CIA World Factbook, 2012). Many people are also living with HIV and constantly face unique life challenges including frequent health problems, economic challenges, and social problems through the associated stigma (Onyeneho, 2009). These HIV-related problems are highly concentrated in Nigeria and thus a meaningful action is required. This study aimed to explore the existence of relationships between the study variables including attitudes, knowledge of HIV, religious beliefs, and sexual risk behaviors in the urban versus rural regions of Nigeria. This could be the basis of developing a working solution to the problem. The study, however, did not address all the variables that could contribute to the effect of the HIV problems, but it confirmed the existence of a significant relationship in most of the variables in urban versus the rural regions of the country . There were no significant difference in engaging in sexual risk behavior among all Nigerians living in rural versus rural areas of the country.

From the study, there was a significant relationship between the HIV related knowledge of participants and their sexual risk behaviors for the urban region. This direct relationship indicated that when people's HIV knowledge increased, their sexual risk behavior also increased.

This relationship could explain why people living in the urban areas of Nigeria are very knowledgeable about HIV but they are still ingaging in risky sexual behaviors. The relationship indicated that despite any efforts to teach people about the risks associated with ingaging in unprotected sex and other risky sexual behaviors, people are

not reducing their risk behaviors. Religion may, however, contribute to fewer cases of engaging into risky sexual risk behaviors. There was also a significant relationship between attitude and sexual risk behavior. The relationship was negative implying that positive attitudes towards risk behaviors like unprotected sex and many sex partners contributed to a decrease in sexual risk behaviors. People with positive attitudes would hence avoid such sexual risk behaviors.

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Appendix

IRB <IRB@waldenu.edu> Jul 15
to me, Peter

Dear Mr. Okeke,

This email is to notify you that the Institutional Review Board (IRB) confirms that your doctoral capstone entitled, "Behaviors and HIV Epidemiology in Rural Vs. Urban Regions of Nigeria," meets Walden University's ethical standards. Since this project will serve as a Walden doctoral capstone, the Walden IRB will oversee your capstone data analysis and results reporting. Your IRB approval number is 07-15-15-0141688. This confirmation is contingent upon your adherence to the exact procedures described in the final version of the documents that have been submitted to IRB@waldenu.edu as of this date. This includes maintaining your current status with the university and the oversight relationship is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, this is suspended.

If you need to make any changes to the project staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 10 business days of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRS's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB materials, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website: http:1/academicguides.waIdenu.edu/researchcenter/orec

You are expected to keep detailed records of your capstone activities for the same period of time you retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:
http://www.surveymonkey.com/s.aspx?sm=gHBJzkJMUx43pZegKimdiQ3d3d

Sincerely,
Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance
Email: irb@waldenu.edu
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